

# The Iron Age

A CHILTON PUBLICATION

THE NATIONAL METALWORKING WEEKLY

July 16, 1953


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UNIV. OF MICHIGAN

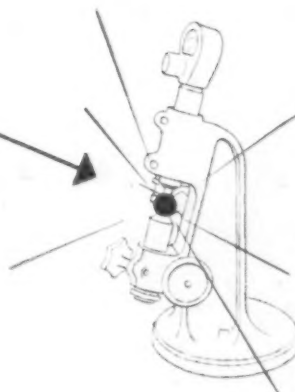
JUL 16 1953

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## Pattern for Precision



Precision begins with an ideal at New Departure... an ideal to achieve the ultimate in perfection. Here, engineering, research and production follow this pattern for precision, and the products of their combined effort—both component parts and completed bearings—are subjected to countless tests and inspections. In fact, many of the instruments used in gauging the accuracy and precision of the bearings were designed and developed by New Departure engineers, and some are exclusive with New Departure. The sensitivity of this equipment is revealed in instances where the sphericity of the cups and cones is held within limits measured in millionths of an inch. And the tolerances for other parts... balls, seals and separators... must meet the highest standards. Remember... wherever ball bearings are best for the job, the best ball bearings are made by New Departure.



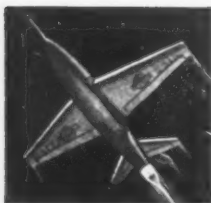
NOTHING ROLLS LIKE A BALL



**NEW DEPARTURE**  
**BALL BEARINGS**

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT  
Also Makers of the Famous New Departure Coaster Brake

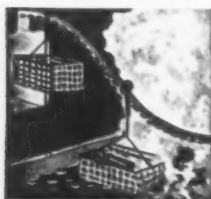
# How long will this valve last?



Hoskins Chromel-Alumel thermocouple alloys accurately register exhaust temperatures of jet aircraft engines.



Heating elements made of Hoskins Chromel give long life service in industrial electric furnaces, home appliances.



Hot stuff for hot jobs! Hoskins Alloy 502 is widely used by industry for many heat resistant mechanical applications.

You're looking in on a life-saving operation . . . one that's being performed on an engine valve. Not an ordinary valve for an ordinary engine. But a valve destined for long, hard service in an aircraft, tank, or heavy-duty truck engine. A valve that must be made to stand up under extremely severe operating conditions . . . high temperatures, for long periods of time, plus the destructive corrosive action of hot exhaust gases.

And what's responsible for long valve life under such gruelling conditions? Nothing less than Hoskins Alloy 717 . . . a closely controlled nickel-chromium composition developed especially for just such tough and vital service. It's highly resistant to heat . . . immune to the corrosive atmospheres created by combustion of high octane fuels. What's more, it's readily

applied by fusion to form a non-porous protective facing over the basic valve forging.

But 717 is only one of several specialized nickel-chromium alloys developed and produced by Hoskins. Among the others: Alloy 502 . . . known throughout industry for its dependability on a wide range of heat resistant mechanical applications. The Chromel-Alumel thermocouple alloys . . . unconditionally guaranteed to register true temperature—E.M.F. values within specified close limits. Spark plug electrode alloys which have become universally accepted standards of quality and durability. And, of course, there's Hoskins CHROMEL . . . the *original* nickel-chromium resistance alloy used as heating elements and cold resistors in countless different products.

**HOSKINS**  
**MANUFACTURING COMPANY**

4445 LAWTON AVENUE, DETROIT 8, MICHIGAN



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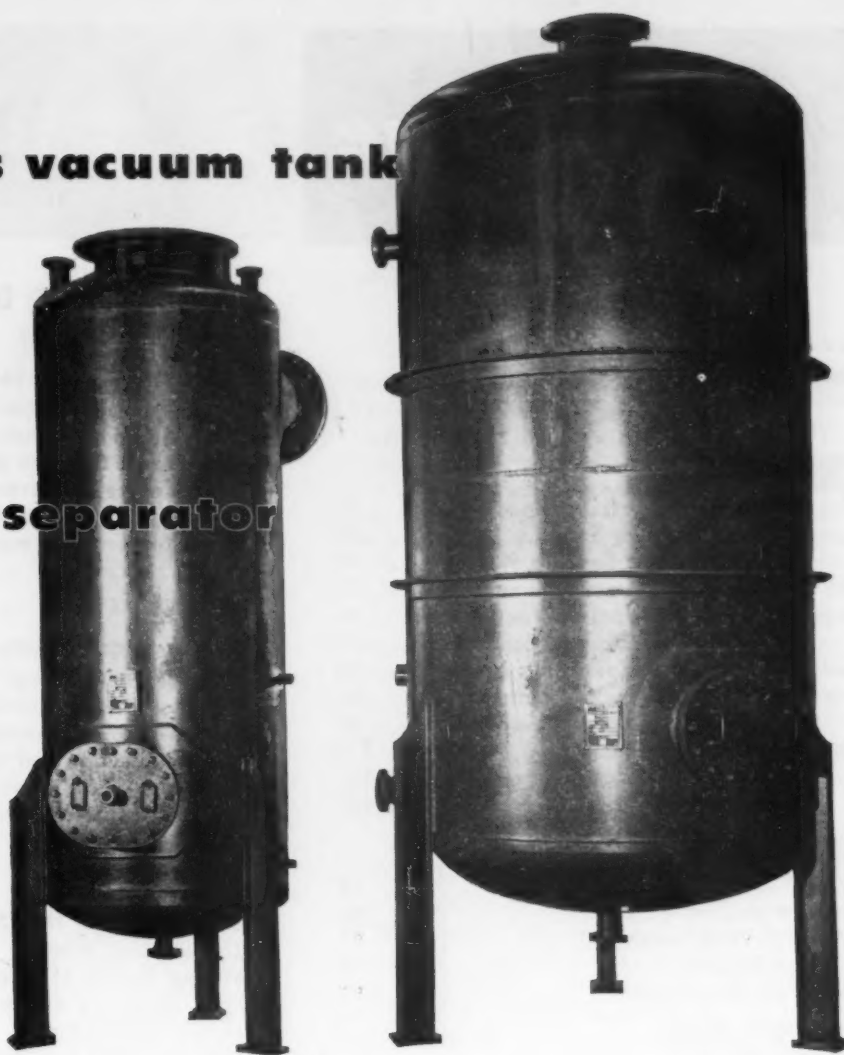
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July



**This vacuum tank**

**This cyclone separator**



## BOTH MADE BY WELDING

The vessel at left in the photograph is called a cyclone separator. It is 48 in. in diameter, and about 13 ft high. Its shell thickness is  $\frac{3}{8}$  in., its weight 5706 lb.

Its big brother, at the right, is a vacuum condensate tank, 72 in. in diameter, 14 ft, 10 in. high,  $\frac{3}{8}$  in. in shell thickness, and weighing 6452 lb. Both vessels are for use in a desulphurizing unit for a manufacturing plant, and were turned out in our Weldments Shop.

You may never have occasion to use anything as formidable-sounding as a cyclone separator, or a vacuum condensate tank. But if you build any kind of mechanical equipment, we strongly suggest that you look into the worthwhile advantages of Bethlehem Weldments.

### Here's What You Get with Bethlehem Weldments

**ECONOMY.** There's no excess weight with Bethlehem Weldments, nor any sacrifice of rigidity. And of course weight-reduction often makes possible a lower manufacturing cost.

**VERSATILITY.** With Bethlehem Weldments there's no limit to the sizes or types of shapes that can be welded. These weldments can be used effectively as simple parts, or as sections of intricate assemblies.

**FREEDOM OF DESIGN.** You have absolute freedom of design with Bethlehem Weldments, because the steel can be bent, pressed or shaped prior to welding, without affecting its physical structure.

**FREEDOM OF USE.** Bethlehem Weldments can be used alone. Or they may be combined with forgings, castings, or both.

If you would like to discuss with a Bethlehem representative the advantages to be derived through the use of weldments, please write or phone the nearest Bethlehem office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

# BETHLEHEM WELDMENTS



July 16, 1953

# The Iron Age

Vol. 172, No. 3, July 16, 1953

\*Starred items are digested at the right.

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Address mail to 100 E. 42 St., N. Y. 17, N. Y.

# DIGEST of

## NEWS DEVELOPMENTS

### INDUSTRIAL FILMS ARE GOOD BOX OFFICE—P. 69

The industrial motion picture is proving itself to be a selling and training medium with strong potentials. Low-budget films are giving impetus to the trend. Producers of consumer goods have long been interested. Next came capital equipment builders. Now job foundries, forge shops, machine shops, others join in.

### ANOTHER COAL AREA HUNTS NEW INDUSTRY—P. 73

Loss of coal mining, textile industries has Wilkes-Barre area aggressively seeking new industries. Development programs offer new firms financial help in obtaining plants and sites. Efforts have created 9000 jobs in 39 new firms, offsetting about one-third of losses due to coal mining fadeout.

### UMW HITS TAX TROUBLE ON PENSION PLAN — P. 75

United Mine Workers union has the problem of convincing Bureau of Internal Revenue that benefits paid from its health and welfare fund, as well as income earned by investment, should be free of income taxes. BIR has ruled only the fund's nucleus is exempt. No effect is felt by other welfare and pension plans.

### INDUSTRY ON PLANT SHUTDOWN VACATIONS—P. 76

The plant-wide vacation has become an industrial institution. In the steel industry there's a saying that blast furnaces and openhearths must never rest—but everyone's watching Sharon Steel's experimental shutdown. It might start something. Some firms worked like mad in June to prevent shutdown sales dip.

### PARTS STANDARDIZATION PAYS DIVIDENDS — P. 77

It's only natural to try for a broader share of the market by adding new products. But think about standardization before you put the next new model into production. To be really effective, standardization must start on the drawing board, permeate all phases in plant. It helps with high or low output.

### FREEDING MOLY JUGGLES ALLOY STEEL SPECS—P. 86

Decontrol of molybdenum on July 1 brought a quick revision of automotive alloy steel specifications. Firms differ on alloy opinions. The fact that nickel is still strictly controlled prevented even more wholesale shift. Nobody has yet been able to return to nickel-moly steels or high nickel triple alloy.

# the Week in Metalworking

## ENGINEERING & PRODUCTION

**NEW LIFT TRUCKS RAISE LEVEL OF STYLING—P. 127**  
Stability, maneuverability and safety have been built into a new streamlined fork truck. All parts were engineered into an attractive rugged truck made with a minimum of tooling costs. Based on simple triangular shape, the truck seems to hug the ground. Operators are proud of its appearance.

**BETTER HEAT TREATING FOR GOOD BEARINGS—P. 131**  
Specialized metallurgy and hardening procedures have been developed to meet the needs of modern anti-friction bearing manufacture. Bearings, made from through-hardening or case-hardening steels, must withstand rigorous conditions. Hardening power is main factor in through-hardening steels.

**MECHANIZE FINISHING TO REDUCE COSTS—P. 136**  
Demand for lower unit finishing costs has led to the development of highly mechanized rocket body finishing lines. Components are handled at high speeds on separate lines. Steel parts receive an alkaline rinse and then phosphoric and chromic acid dips before painting. Automatic painting setups are used.

**IMPROVE CARBON PICKUP IN FOUNDRY IRON—P. 140**  
Higher carbon pickup in foundry iron with half the fuel is claimed possible with a new high-carbon coke. It permits use of more low grade scrap, less pig iron in the cupola. Lower bed heights and smaller coke splits permit faster melting. Short melting cycles cut refractory maintenance.

**MICROFILMING CUTS RECORD STORAGE COSTS—P. 142**  
You can save money, "push out" plant walls by cutting storage areas and save valuable office time by microfilming industry records. Microfilming adds an extra margin of safety in storage of records. They can be easily moved. Cost of microfilming varies with the preparation needed.

**NEXT WEEK—HOW ONE FIRM FABRICATES TITANIUM**  
Brittleness in titanium and its alloys stands as a major obstacle to wider titanium application. Proper use of heat is a big help in overcoming the metal's poor forming qualities. Drop forge blanks can be press sheared without shattering by using an induction coil to heat bar stock.

## MARKETS & PRICES

**TRUCK SHIPMENTS OF STEEL ON UPHILL CLIMB—P. 71**  
The trend to heavier shipments of finished steel by truck is on the upgrade while barge lines take an increasing share, report steel mill traffic managers. One company reported an increase of from 6 to 30 pct. The customer specifies what transportation he wants. Need for fast delivery has aided highway haulers.

**BRITISH STEELMEN ARE CONFIDENT OF FUTURE—P. 81**  
With the end of government ownership of the steel industry, Britain's steelmakers were optimistic about the future. Production is rising and demand is more than keeping up with supply. Increased competition from Schuman Plan countries is expected, but Britain believes it will maintain its price advantage.

**ECONOMIST ASKS CURB ON AUTO PRODUCTION—P. 91**  
A White House economist, Dr. Arthur F. Burns, recommended curbing booming auto production by trimming the number of working hours—not in employment. He predicted industry would mainly absorb steel price hikes. Extension of excess profits tax appears headed for complete congressional endorsement over opposition.

**MOBILIZATION POLICY SUPPORTS VANCE PLAN—P. 97**  
Defense Mobilizer Flemming's statement stressing need to build up productive capacity rather than military end items seems to assure adoption of some version of the Vance Plan. Estimates are that Congress will approve around \$225 million to start the program. Bill passed to extend machine tool stockpiling.

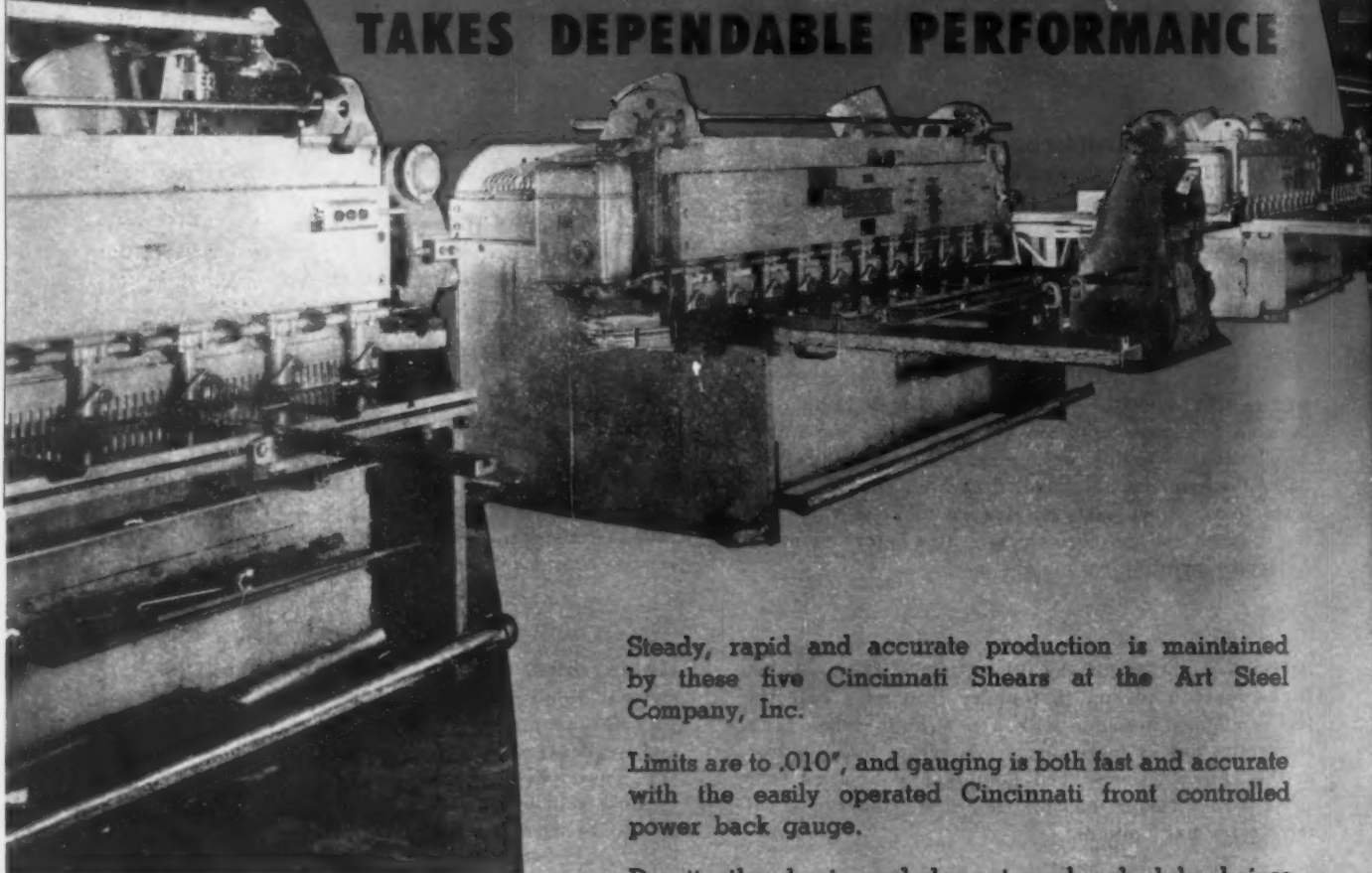
**STEEL MILLS STILL FACING STRONG DEMAND—P. 159**  
Don't be fooled by the decline in steelmaking rate of past few weeks. Demand for steel at regular mill prices is still plenty strong, and carryovers into fourth quarter are expected on major items. Vacations, maintenance, and heat are holding output back a few points. But the rate will probably be close to 100 again soon.

**BOOST ALUMINUM WAGES, PRICES TO FOLLOW—P. 162**  
Aluminum Co. of America has settled with the United Steelworkers and the International Union of Aluminum Workers. Net result is a wage boost of 8½¢ per hour, same as the raise won in the steel industry. Alcoa indicates its reluctance but states that higher prices must result. How much and when are the questions.



# SHEARING 20,000,000 lbs. of steel

## TAKES DEPENDABLE PERFORMANCE



Photos—  
Courtesy the Art Steel Co., Inc.,  
New York, N. Y.

Steady, rapid and accurate production is maintained by these five Cincinnati Shears at the Art Steel Company, Inc.

Limits are to .010", and gauging is both fast and accurate with the easily operated Cincinnati front controlled power back gauge.

Despite the day-in and day-out work schedule, knives are sharpened but once a year.

Investigate these accurate, dependable Cincinnati Shears—you will find them profitable in your shop. Remember, straight-edged square blanks, accurate to size, are produced at low cost on these modern Cincinnati Shears.

Write for Shear Catalog S-6.

### THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

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# THE IRON AGE

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## Editorial

*The Iron Age*

FOUNDED 1855

## High Level Fiddle-Faddle

NOT too long ago President Eisenhower called for deeds not words from Russia before he would attend a Big Four meeting. That viewpoint is now being butchered right and left by English and French pressure, by Tito and by "inspired" news stories from abroad.

The leader of this effort to dignify Malenkov and the Kremlin with a star billing is Sir Winston Churchill. He has encouraged the belief that a Big Four meeting should be held quickly. He has also caused to be built up in the world the dangerous feeling that such a meeting will succeed where all others produced world chaos.

Mr. Churchill has taken on his tired shoulders a responsibility which, to say the least, is awful. He has gained support from the French and will use the current Three-Power meeting as a tool to get his wish. He has tipped off the Russians that he is anxious to have a meeting with them soon. Other great Prime Ministers of England never showed their hand in that manner.

Inspired news stories from Europe and England—supposedly coming from experts—tell us that we are wrong in holding out against an early Big Four meeting. We are admonished that, with things "changed," now is the time to get concessions from the Kremlin.

Are we to believe that a dangerous and desperate Kremlin—even if it is weakened—would acknowledge further weakness by giving ground at a Big Four meeting? What if it did give sugar-coated promises? Mr. Churchill knows how much such promises are worth—he was on the receiving end several times.

In the 1870's, while helping England's great Disraeli put Russia in her place, Lord Salisbury observed, "No lesson seems to be so deeply inculcated by the experience of life as that you should never trust experts." How true now!

Bluntly the Kremlin needs a little more softening up before it gets worldwide publicity as a member of an honorable meeting. We need also the proof that Mr. Eisenhower has asked for—not forced by uprisings but by honest consent. We might wait also to see who is boss in Russia—and who can negotiate with authority.

Pressure for a rush meeting with the Kremlin is high level fiddle-faddle. What has happened there in recent weeks proves it.

*Tom Campbell*

Editor



## 1/24,000,000<sup>TH</sup> PART OF A GROWING BUSINESS

That's the steel warehouse, where more than 24,000,000 orders for steel are filled each year—orders that call for 14,000,000 tons, about 20 percent of all the steel made in the United States during a year. Their customers number in the neighborhood of half a million, or almost anyone who has a need for steel of any kind.

Sharon has, for more than 40 years, worked with warehouses as a method of distributing steels, in small amounts, into the hands of smaller users.

As an example, Sharon's hot rolled, mill edge, narrow band is extremely

popular in the manufacture of toys, furniture, floor grating, etc. Wherever sharp split edges create safety hazards or consumer inconvenience, manufacturers like the smooth mill edge. To get a similar edge from wide stock would require expensive edging operations. Thus, many manufacturers insist on a mill edge. Where the demand is sufficient Sharon supplies these manufacturers directly. But, in the hundreds of cases where smaller users want this same edge advantage, the warehouse can best perform the distribution. What's more, warehouse-

men know steel, and in the past have been instrumental in introducing fabricators to the advantages of just such hidden features as the mill edge. Filling the void that existed between mill and manufacturer the warehouse has extended a great service to each and thus has become a definite factor in the world's greatest industry.

**SHARONSTEEL**

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**SHARON STEEL CORPORATION**

*Sharon, Pennsylvania*

# Dear Editor:

## Letters from readers

### Summer Checkup

Sir:

Your editorial "Summer Checkup" sums up a lot of things that race through our minds, but seldom gain personal expression . . . Yes, I heartily agree, more businessmen need at least a "Summer Checkup."

**R. K. VINSON**  
Executive Director

Machinery Dealers National Assn.  
Washington

Sir:

With your permission we would like to insert in our company's monthly publication your editorial "Summer Checkup." We hope that you will consent.

**A. C. TUNIS**

J. E. Baker Co.  
York, Pa.

Sir:

This comes to thank you for your editorial in *THE IRON AGE* for June 25. It is good to be reminded now and then that simple, everyday kindnesses and occurrences add the most value to one's life. . .

**B. KENDALL**  
Technical Librarian

De Laval Steam Turbine Co.  
Trenton, N. J.

### Cold Extrusion

Sir:

In your publication of May 7 you had an article on cold extruding steel parts.

We wonder if you could give us some information and direct us to the proper person in the Pontiac Div. of General Motors Corp. with whom we could correspond and find out the speed of the stroke required to cold form these pieces. Also some other information we may be able to use for the same type of work.

**R. SHLIFER**  
Secretary

Jac-Lar Products Co., Inc.  
Philadelphia

Write to Mr. Clark, Plant Layout Dept., for more information about the Pontiac cold extrusion operation. We believe the presses used are clearing presses, especially designed for this operation.—Ed.

### Foremen's Gripes

Sir:

We are interested in procuring 25 reprints of the article entitled "Foremen: Put Them On Executive Team" which appeared on p. 82 of the May 21 issue.

**M. DUMAS**

American Bosch Corp.  
Springfield, Mass.

### Don't Forget

Sir:

I have read with interest the article "Memory: Executives Shouldn't Forget" in your June 18 issue concerning Dr. Bruno Furst and his School of Memory.

I would appreciate receiving the address of Dr. Furst's headquarters.

**L. W. PAYNE**  
Vice-President—Production

Kilgore, Inc.  
Westerville, Ohio

Dr. Furst's address is Steinway Hall, 113 W. 57th St., New York.—Ed.

### Electroless Plating

Sir:

We are very interested in the process described in the article entitled "Electroless Plating Produces Hard Nickel Coating" appearing on p. 115 of the June 11 issue.

I would appreciate two sets of tear sheets of this article.

**C. H. E. BECK**  
Standards Engineer

Gilfillan Bros., Inc.  
Los Angeles

### New Stainless Alloy

Sir:

It would be most appreciated if you would send the writer six tear sheets or reprints of the article "New Stainless Alloy Fills Long Industry Need" which appeared in the June 18 issue.

**N. W. BASS**  
Vice-President

Brush Beryllium Co.  
Cleveland

### SAE Charts

Sir:

Would you please send us five reprints of SAE Charts Simplify Selection of Heat Treatable Steels, by E. H. Stillwell. This article appeared in the Feb. 14, 1952 issue.

**B. MACLEOD**  
Research Engineer

C. F. Braun & Co.  
Alhambra, Calif.

### Low Temperature Treatment

Sir:

We are very much interested in your article "Low Temperature Treatments Improve Products and Processes" in the May 28 issue. If tear sheets are available, we would appreciate receiving one.

**F. P. CAVENAGH**

Moore Machinery Co.  
San Jose, Calif.

## is spring steel up your alley?



## ... ours too

Pictured is just one of the aisles in Kenilworth's specialized spring steel stock department; here you see a portion of the wide variety of types, sizes and finishes (annealed or tempered) always on hand. Whatever your requirements, however small, Kenilworth can handle your orders quickly. You are assured of uniform end results plus Kenilworth's accurate meeting of specifications in shipment after shipment. Your inquiries are invited.



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IF IT'S A STEEL BELT—BE SURE IT'S A GOODYEAR

# No other V-Belt gives you so many advantages

SINCE their introduction in 1942, Goodyear's Steel Cable V-Belt and Compass-V-Steel Belt have been the leaders in V-belt performance—offering advantages no other V-belt can match. Here's why:

The Goodyear steel-bodied V-Belt has its load-carrying steel cables placed parallel in the neutral plane of the belt. Every cable is uniform in length and tension—eliminating any possibility of a single cable being slack, wavy or out-of-plane. During and after manufacture, every belt is X-ray tested to be sure all cables share the load equally—with no “loafers” and no over-worked cables.

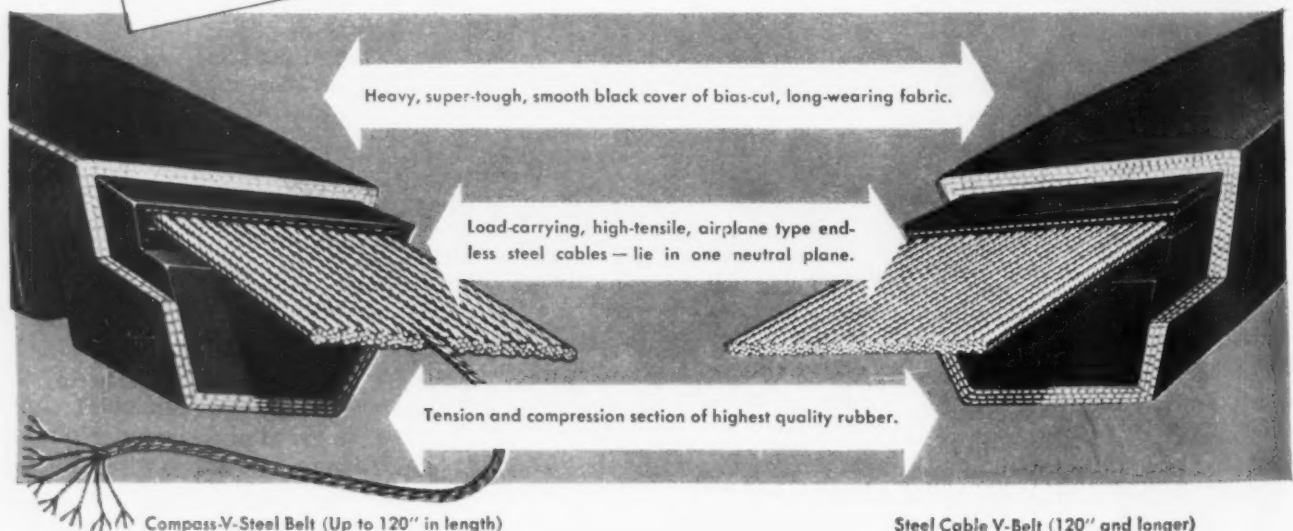
That means these operational advantages on your drives:

- Minimum Maintenance Requirements
- Highest Belt Efficiency
- Smooth Operations at Speeds from 10 to 10,000 fpm
- Greater Strength and Load Capacity
- Minimum Space Demands
- Low Power Consumption

Ask your nearest Goodyear Industrial Products Distributor about Steel Cable V-Belts or Compass-V-Steel Belts for your drives. Or write for details to the G.T.M.—Goodyear Technical Man—at Goodyear, Akron 16, Ohio.

**YOUR GOODYEAR DISTRIBUTOR** can quickly supply you with *Hose (air, water, steam, oil, special), Belting (V-belts, transmission, conveyor, elevator), and other industrial rubber products. Look for him in your telephone directory under “Rubber Products” or “Rubber Goods.”*

HERE'S THE INSIDE STORY



Compass-V-Steel Belt (Up to 120" in length)

Steel Cable V-Belt (120" and longer)

Available in standard or ORS construction; static-conducting when required.

# GOODYEAR

THE GREATEST NAME IN RUBBER



# Fatigue Cracks

by William M. Coffey

## Reader Service Department

Our Reader Service is still going full steam, right on the job. Here's a recent inquiry:

Dear Iron Ages:

We take pleasure in offering you the translation and copy rights for your country of the book: **LO SPEIEGATORE** (The Dream Explainer) by Nusan. Foreword by The Naples Magician in the form of a dictionary with 7373 explanations. It is a most interesting popular and quick selling publication which had a really good success in Italy. Should our proposal meet with your interest, please advise us at once so that we can go further into the matter with a view to coming to a definite agreement. Please answer in French.

Messmens et Messdames:

**MERCY!** *Maise it est impossible pour noose parcelque noose dealez avec work metallique strictement. Pour noose allez danse autre work would etre pour noose trop, trop difficile pour noose. Maise tres mercy, anyway.*

Noose distinguished salute.

The Iron Ages

## Initial And Throw Away

The total payroll of the iron and steel industry in 1952 was 2.8 billion, or just 2 pct less than the previous year, although 11 pct less steel was made because of a long work stoppage. The average steel employee last year received over \$700 more than the average in all manufacturing industries.

\*\*\*

Every day 62,000 babies are born.

\*\*\*

A contractor went out to look over one of his postwar homes. Walking up to a house in which a carpenter was working, he whispered, "Can you hear me through this wall?"

"Yep."

"Can you see me?"

"Not very well."

"That," said the contractor jubilantly, "is what I call a darn good wall."

\*\*\*

Printed on the back of the Rockford Products Co., Detroit, business card:

"We have been in business ever since May 29, 1942. We have been pleasing and displeasing the public ever since. I have

been cussed and discussed, boycotted, talked about, lied to, hanged up, held up, robbed. **THE ONLY REASON WE ARE IN BUSINESS IS TO SEE WHAT IN HELL IS GOING TO HAPPEN NEXT."**

## Two Weeks With Pay

Here's a vacation for those who are tired of the Catskills: (No charge for running this ad).

### TIGER HUNT in India

Life will never be humdrum again when you can look back on the thrills of a tiger hunt. Up on Bhutan border in full sight of the Himalayan mountains, the plains are crawling with man-eating tigers. Nothing can match the excitement of looking down a gun barrel into the bright green, venomous eyes of your tiger, for he is cunning, swift, fierce, enormous. All arrangements made for you, including air transportation, equipment, elephant, mahout, etc. Hunts in the charge of Capt. Graham, professional hunter. Many years experience. Return trip can be arranged so you circle the world at no extra cost in our all-inclusive rate. Extremely reasonable. For full particulars write

**SCOTT HAYES, Hunter**  
Box 17, Bloomington, Ill.

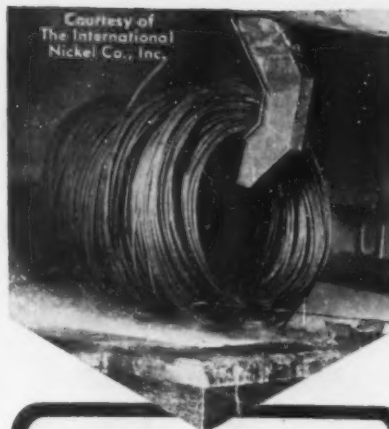
Reference:  
Corn Belt Bank, Bloomington, Ill.

## Puzzlers

The only place where you can head south from your home 10 miles, then go 10 miles west and then 10 miles north and land back at home is at the North Pole—and they say the bears up there are white. Winners: Edwin J. Montgomery, J. J. Brugman, E. R. Lutz, Jack Howarth, Vince McLaughlin, John W. Switack, George Ress, John T. Morris, Wilma Cicero, David Kahler, George Brumfield, Edward Weiler, John Dupuis, Mrs. M. K. Derrickson, Mary Lou Perrott, Robert MacDonald, Jr., W. B. Lobbenberg and Mr. Rice.

## New Puzzler

There are three trainmen in a crew, an engineer, a guard and a fireman. The names of the crew men are Jones, Smith and Robinson, not in order. There are three passengers on the train, Mr. Jones, Mr. Smith and Mr. Robinson. Mr. Robinson lives in Leeds. The guard lives between Leeds and Sheffield. Mr. Jones earns \$5,000 a year. The guard's namesake lives in Sheffield. The guard's neighbor earns exactly three times as much as the guard. Smith can beat the fireman at Billiards. What is the engineer's name?



## NOPCO\* 1067-A means Big Savings of SULFURIC ACID

Nopco 1067-A has a unique ability to reduce surface tension in mineral acid solutions. Thus it affords *big drainage* of acid during pickling, resulting in savings of sulfuric acid in pickling baths.

Addition of Nopco 1067-A actually reduces loss of sulfuric acid solution, through carry-over to the rinsing tank, by as much as 30% to 40%. It has no adverse effect on pickling inhibitors. In sulfuric acid solutions it eliminates the need of a foam blanket.

This outstanding Nopco chemical also assures other important advantages, such as:

- reduced operating time because Nopco 1067-A shortens the pickling cycle—steps up bath activity. Gives faster, more uniform penetration of oxide scale.
- lowered costs and easier acid disposal—since better drain-off means fewer rinsings. Acid is localized in first tanks.
- reduced acid contamination in operations following pickling—with the result that tool and die life are increased.

Mail us the attached coupon today:

**NOPCO CHEMICAL COMPANY**  
Harrison, New Jersey

Gentlemen:  
Please send me full information about Nopco 1067-A for use in pickling.

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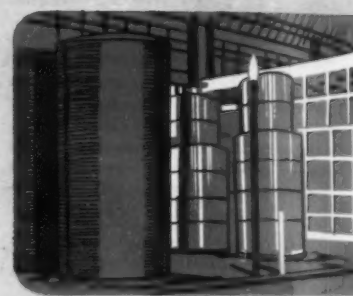
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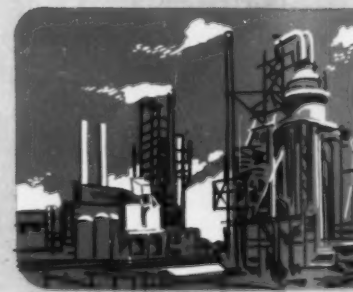
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Chemical-Petroleum

- ★ Assured supply at less cost
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Slash costs of inert gas—while you cut costs of high-purity oxygen! Make both in your own plant with one Air Products Generator. Standard *High-Purity* models are available with oxygen capacities from 2500 to 12,000 cubic feet per hour—nitrogen capacities from 4000 to 36,000 cubic feet per hour. *Liquid* oxygen and nitrogen if desired. Also *Tonnage* Generators in standard models, or of special design. Capacities *unlimited*! Write us your requirements, and send for our CATALOG.

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## Dates to Remember

### Meetings

#### JULY

**TRUCK TRAILER MANUFACTURERS ASSN.**—Annual summer meeting, July 23-24, Edgewater Beach Hotel, Chicago. Association headquarters are at 1024 National Press Bldg., Washington.

**NATIONAL TOOL & DIE MANUFACTURERS ASSN.**—Summer meeting, July 30-Aug. 1, Milwaukee. Association headquarters are at 907 Public Square Bldg., Cleveland.

#### AUGUST

**WESTERN ELECTRONIC SHOW & CONVENTION**—Aug. 19-21, Civic Auditorium, San Francisco. Headquarters are at 1355 Market St., San Francisco.

#### EXPOSITIONS

**NATIONAL METAL SHOW**—Oct. 19-23, Cleveland.

**NATIONAL AUTOMATIC MERCHANDISING ASSN.**—Convention & Exhibit, Aug. 23-26, Conrad Hilton Hotel, Chicago. Association headquarters are at 7 S. Dearborn St., Chicago.

#### SEPTEMBER

**ELECTROCHEMICAL SOCIETY**—Fall meeting, Sept. 13-17, Wrightsville Beach, N. C. Society headquarters are at 235 W. 102nd St., New York.

**NATIONAL PETROLEUM ASSN.**—Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters are at Munsey Bldg., Washington.

**NATIONAL FOUNDRY ASSN.**—Annual meeting, Sept. 16-18, Plaza Hotel, New York. Association headquarters are at 53 W. Jackson Blvd., Chicago.

**PACKAGING MACHINERY MANUFACTURERS INSTITUTE**—Annual meeting, Sept. 20-23, Skytop Lodge, Pa. Institute headquarters are at 342 Madison Ave., New York.

**TRUCK BODY & EQUIPMENT ASSN., INC.**—Sept. 21-23, Sheraton-Gibson Hotel, Cincinnati. Association headquarters are at 1122 Dupont Circle Bldg., Washington.

**AMERICAN MINING CONGRESS**—Metal and Nonmetallic Mineral Mining Convention, Sept. 21-24, Olympic Hotel, Seattle. Headquarters are at 1200 18th St., Washington.

**INSTRUMENT SOCIETY OF AMERICA**—National Instrument Conference and Exhibit, Sept. 21-25, Chicago. Society headquarters are at 1319 Allegheny Ave., Pittsburgh.

**NATIONAL ASSN. OF FOREMEN**—Annual convention, Sept. 23-26, Milwaukee. Association headquarters are at 321 W. First St., Dayton.

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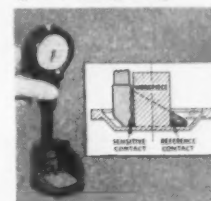
WE FIND CASE AFTER CASE where process engineers specify and build entirely new gage designs when a quick modification of a Federal catalog gage would do the job better, faster, and at less cost. When you start to process your jobs, that's the time to take advantage of our years of experience in designing every sort of dimensional visual gage: at Federal we know the basic difference between designing and building precision gages and designing other mechanical products.

Designing precision gages requires knowledge of how to *magnify* and *transfer* measurement variations *precisely*, without loss of motion—with a minimum of friction and inertia in the working parts—and a hundred other details which do not concern the usual tool and machine designer.

Call in Federal when you *start* processing a job and let us engineer your gages for you. Federal Products Corporation, Providence 1, Rhode Island.



Regular Federal Snap Gage modified to inspect gear teeth spacing.



Basically a hole gage, modified to measure O. D.



Three indicating depth gages modified to suit special requirements.



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Largest manufacturer devoted exclusively to designing and manufacturing all types of **DIMENSIONAL INDICATING GAGES**

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- ☐ I would like to discuss a gaging problem with you.  
I am interested in the latest improved gage or gages below:

- ☐ Dimensional Dial Indicators  
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# BZZ wheels



Get the "TOUCH of GOLD"  
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How do you figure your costs of grinding alloy steel billets, slabs, sheet bars and strips?

In terms of

- cost per ton ground?
- cost per pound of metal removed?
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Any way you reckon it, Norton BZZ Wheels will register by far the best score on your cost sheet. After six years of developing and field-testing, these exceptional wheels are making good in a big way.

Here are the benefits they're bringing to mills across the country:

**Advantages To Management**—Lower cost grinding . . . increased productivity . . . greater safety . . . better finish.

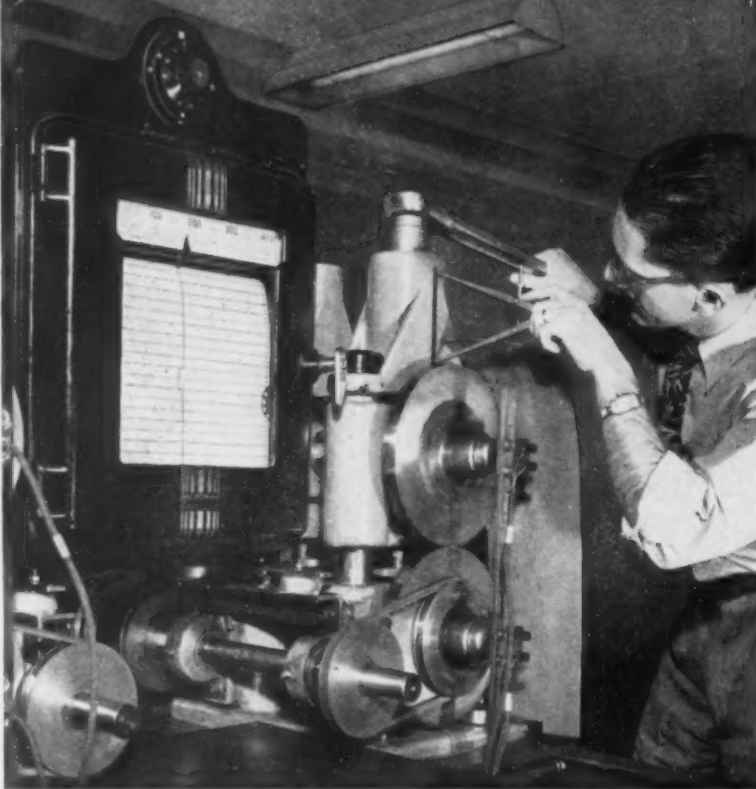
**Advantages To Operators**—Faster cutting . . . easier handling . . . safer.

Let us prove how Norton BZZ Wheels can bring these same advantages—the sure "Touch of Gold"—to your own conditioning of alloy steel. Your Norton Abrasive Engineer will gladly arrange a test in your mill. Or write direct to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities—listed in your telephone directory, yellow pages, under "Grinding Wheels." Export: Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.



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# HYATT

## ROLLER BEARINGS

# THE IRON AGE Newsfront

IF GOVERNMENT RESTRICTIONS ON NICKEL are lifted, producers of 1 pct Ni stainless steel for civilian uses will probably shift to a 4 pct Ni analysis. Advantages would be better corrosion resistance and a 50 pct reduction in manganese content. The 1 pct Ni stainless contains about 15.5 pct Cr and 17 pct Mn.

A NEW POLYSTYRENE SHEET CONTAINING RUBBER can be formed like sheet-metal. Inexpensive wooden dies are used at low pressures and low temperatures. Improved physical properties at lower cost are advantages of the material. To be marketed initially in widths to 27 in., plans are being made for production of sheets to 56 in. wide.

FIRST DIRECT REDUCTION plant in Spain is now being built for the country's principal agricultural implement maker. Pelletizing plant will have a 50 ton per day capacity; reduction plant capacity will be smaller. Low grade coal will be used. Direct-reduced iron will be charge material for electric furnace steel.

CUBA WANTS TO SELL MORE chrome, nickel and iron ore to the United States. At request of Cuban government-banking authorities, the U. S. Bureau of Mines has sent a veteran mining engineer to the island as technical adviser on development and production.

AUTOMAKERS ARE ADJUSTING their alloy steel specifications following the relaxing of government controls on molybdenum. In many cases however, the triple alloy steels that were substituted have proven completely satisfactory and will be continued in certain parts.

SLITTING TO HIGH TOLERANCES has become a specialized operation. At least one firm will enter the field within the next few weeks. Rather than combine a warehouse and slitting operations, the new firm will slit on a jobbing basis for warehouses and will carry no steel stocks.

REMOVAL OF FURNACE LININGS BY EXPLOSIVES is continuing in the experimental stages. A recent full dress test indicates the process still calls for further experimentation.

WATCH FOR INCREASING USE OF FILMS in employee indoctrination in plants where labor turnover is high. One large defense plant recently figured costs, found it was using three hours to indoctrinate each employee on plant layout, etc. With film now being made the job can be done in about 30 minutes.

USE OF VAPOR CORROSION INHIBITOR impregnated paper is growing rapidly in the auto industry. Of all available methods of protection, firms report this method requires least work to place parts in service. Some firms report savings in handling costs pay for cost of paper.

IS OUR TITANIUM PRODUCTION PROGRAM ADEQUATE? One recent survey shows 1955 airframe production, with allowances for spares, scrap, conversion from sponge to sheet, could eat up 20,000 tons a year. Planned production aims at 22,000 tons by 1955, the survey states. But, these figures do not consider ambitious programs for use of the metal in jet engines and missiles, Army Ordnance, Navy.



*Homocord Conveyor Belt—More use per dollar*

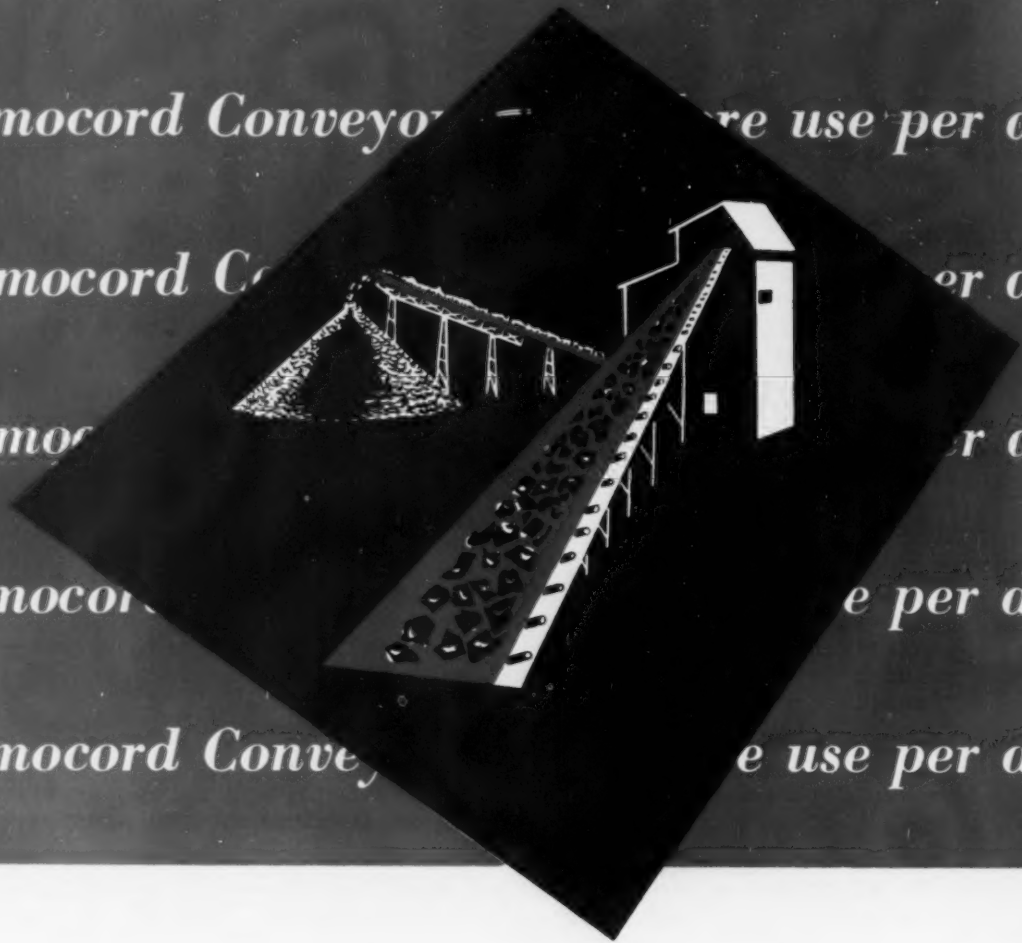
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*Homocord Conveyor Belt—More use per dollar*



**MORE SHOCK-LOAD CUSHIONING . . .** The extra body-cushion built into Homocord Conveyor Belt dissipates even the shock of sharp impact from large lumps of coal, rock and ore . . . A Homocord Conveyor Belt resists gouging and cutting. It lasts longer . . . and hauls more too—because it troughs naturally and trains easily in the idlers. That's **MORE USE PER DOLLAR**. Another R/M Conveyor Belt, Ray-Man "F", is designed particularly for underground mining where pulleys are small and great flexibility and tear resistance are needed. Both of these R/M belts give you long life on the job, **MORE USE PER DOLLAR**. Ask the R/M distributor for Bulletins 6906 and 6915. R/M field engineers back him up to save you money—not only in conveyor belts, but in hose, transmission and V-belts.



MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

**RAYBESTOS-MANHATTAN, INC.**



Flat Belts



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Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facing  
Asbestos Textiles • Teflon Products • Packings • Sintered Metal Parts • Bowling Balls



# FILMS: Potent Box Office in Industry

**No longer a Hollywood monopoly . . . Industry's using motion picture to sell and to train . . . Low-budget films give impetus to trend . . . What they cost—By K. W. Bennett.**

Jumping celluloid is no longer a Hollywood monopoly. The industrial motion picture is proving to be a selling and training medium with strong potentials.

With competition on the increase, a great many companies are checking the use of industrial moving pictures as a selling tool.

What has added momentum to the movement has been the advent of low-budget industrial films. Aside from the confirmed users, little is known about the companies "shooting" industrial films and the methods they use. Prospective film buyers are showing mounting interest and are asking a number of questions:

## Appeal Rubs Off

Who is using industrial films? Large producers of consumer goods have long accepted the film. They generally maintain their own photo branch which includes movie-making among its skills.

The heavy interest shown by consumer-goods producers has drawn the capital equipment builders into the film field as well. When the appeal of communicating through celluloid rubbed off on component suppliers of the big firms, they too began making company films.

You can see suppliers of electric motors, rubber goods, fasteners, machine tools, portable power tools, welding equipment, rust preventatives, lubricants, freight hauling, steel, and building materials represented on 16 mm screens at annual conventions from Texas to Bangor.

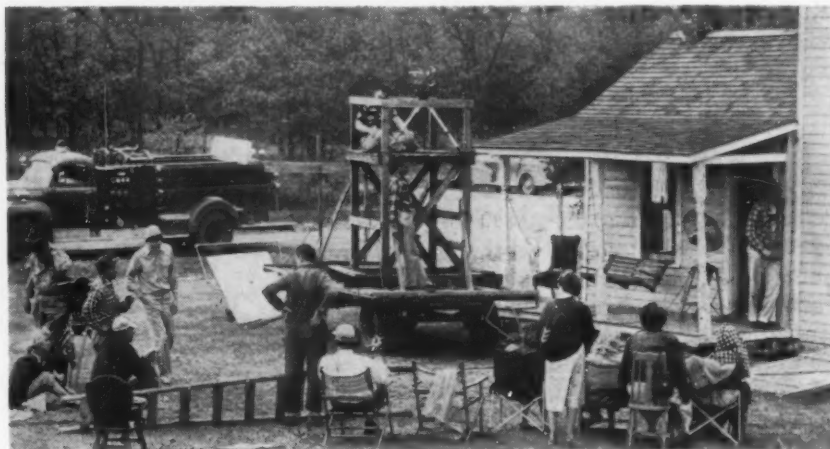
Now, the industrial film companies are beginning to hear from a third tier of industry. The job

foundries, forge shops, machine shops, structural fabricators, and stampers are interested, opening a vast new field. To many small manufacturers, price is an all-important item, and it has only been since the cost of industrial movies began to drop that these firms have become an important market possibility.

Firms employing only from 100-200 men are currently making

Running a close second to actual selling is the use of the industrial film in sales training. With most sales forces now alerted to rising competition, companies are showing their salesmen and distributors why their products are better via the film.

The result: distributors and salesmen get a unified selling story and description of their product. Sales chiefs must crystallize their sales presentation into slick shape before it can be shown to such an audience. In sales training, the sound-slide film is often used. It is less expensive than a complete



LOCATION SHOOTING of industrial films gives dramatic but often expensive results. Here Colburn Film Services gets ready to partially burn down farmhouse in shooting American Petroleum Institute's "Farm Petroleum Safety." Black powder charges exploded in kitchen and flame pots burned inside. Crew waits for things to get hot.

films—but few really small firms have yet gone with the trend.

Nearly all firms using motion pictures today do so mainly for straight selling—whether to consumers in rural areas or to single purchasing agents in downtown offices. One concern mails a film to a potential buyer before sending a salesman. An accompanying letter explains that this is a 13-minute selling message. Idea is to have the film help open the door for the live salesman who shows up soon after.

motion picture.

A slow third in the field is the use of industrial films to train employees in plant safety, in performing their jobs, in learning about the company. While the bulk of film production goes to selling and sales training, employee training films have been well-received and their use is spreading.

## What Films Cost

A newcomer is the film that indoctrinates employees. A Midwestern firm calculates that one of

## Special Report



CAMERA CREW shoots film on how rural users can handle petroleum products safely.

their high priced personnel mean wastes an average 3 hours with each new employee, explaining about the cafeteria, the busses, and other essentials. It is currently making a film to do the job in half an hour and free the well-salaried personnel man for other jobs. The film will pay for itself in a little over a year.

### Cost Rules Elastic

By two rules of thumb, the industrial movie industry estimates the cost of a film at about \$1000 to \$1250 per minute, and the cost of sound-slide films (still pictures in sequence with background narration) at \$350 to \$500 per minute or \$50 to \$75 per single picture.

Like most rules of thumb, these are elastic. For instance, a railroad company will produce a series of safety shorts in the near future for only about \$5000 per 20-minute film. Part of the filming was done by a cameraman on its payroll. Another firm made a 28-minute film that cost just over \$3000.

### Color Films Pull Best

A group of small firms made a syndicated film that could be used by each by merely changing titles. Cost was only \$300 per firm. The syndicated film is a tough proposition to coordinate, however, and lacks the impact of a custom-tailored industrial film produced for a specific company. Free-lance cameramen have produced accept-

able movies at costs as low as \$200-300 per minute.

Color films will cost anywhere from 10 to 25 pct more than the old black-and-white film. Yet, most industrial films are being made in color. Many buyers of industrial films agree color films are worth

### How to Cut Film Costs

(1) Have plenty of the right kind of electric power available when the camera crew arrives at the plant.

(2) Have a clear idea of what is wanted in the film, what workmen should be on the job, how they should be dressed, what machines should be ready.

(3) When possible, a representative of the manufacturer may prepare an outline of the kind of motion picture story wanted. This saves the script writer's time.

(4) Avoid a great deal of animation, complicated movements of inanimate objects. One source estimates this can cost as much as \$5000 per screen minute.

(5) Use a narrator when possible. Letting characters on the screen talk the story is Hollywood league stuff, but costs more. Often a background narrator can do the job just as effectively.

(6) "Location" shots, where a camera crew must be sent into the field, increase cost considerably. If a film is planned so most camera work can be done in a limited area, costs are reduced.

(7) Some times arrangements are made for a cameraman in the plant to shoot some of the footage. This may be used by the film company for any scenes that don't require use of their own special cameras and equipment.

far more in promotional value than the black-and-white despite their increased cost. One film company that produced 75 presentations last year (including motion pictures and sound-slide films) made only one in black-and-white.

The average movie runs from 13.5 to 15 minutes. The 13.5-minute length is used where the film is to be made available to television stations. A smaller number are being made 28 to 30 minutes long.

### Good Films—Low Cost

While the average 15-minute film costs \$15,000 and up, an increasing number of good films are being made in the same length at costs of between \$6000-\$10,000.

Film makers generally agree that color 16 mm has the most impact or emotional value in producing a selling picture. For training salesmen or distributors, the 16 mm black-and-white film has been used, and the sound-slide film has proven effective. Although the latter two lack the power of a color movie, they are effective where the audience is already receptive and is looking for some kind of training.

Results of films on sales are difficult to track down. The only solid indicators that sales films are successful is the fact that manufacturers who have been using them are coming back for more. Many claim good results.

### "Slide-Motion" Films

One report indicates that the number of "key" or major producers of industrial films has increased from 116 to 126 in the last year and their estimated gross income rose from \$45 million to \$51 million.

Aiming at the low-cost field, several industrial film companies are making "slide-motion" films. These are 16 mm film strips of still pictures shown through a standard projector. They give the illusion of motion through the use of "wipes," "fades," and other motion picture tricks added to the film strip in the lab at low cost.

## TRUCKS: Haul More Finished Steel

**Trend to highway hauling goes uphill—at expense of rails . . . Barge lines get larger share . . . Need for fast delivery aids truckers . . . Helps dispersal—By J. B. Delaney.**

Steel mill traffic managers report the trend to rising shipments of finished steel by truck at the expense of rail is continuing. Meanwhile, barge lines appear to be grabbing an increasing share of steel shipments.

One steel producer's experience indicates the rate of climb of truck shipments may be leveling off—but still is noticeably traveling uphill. In 1946 this firm shipped only 6 pct of its products via the highway. From this low point the shipment percentage has risen to about 27 pct in 1949-50—and today's estimate is 30 pct.

### Customer Decides Shipping

Another company noted that in some recent months, finished steel shipments by truck were over 65 pct from one of its plants and at another the percentage reached 80. At the same time, barge shipments averaged about 13 pct against 10 pct some time ago.

One steel plant manager who reported that 45 to 55 pct of steel shipments were hauled by truck added: "It really makes no difference to us how the steel is transported. Our customers specify the type of shipment they want and that's it."

Favorably influencing the trend to shipment by truck has been the lean state of steel inventories in recent years. Consumers specified truck shipment to make certain needed steel reached them quickly.

### Rail-Truck Tussle

Militating against truck operators in Pennsylvania have been that state's less lenient truck weight restrictions. But despite these, railroads have been feeling the effects of trucking competition.

Now pending in the Pennsylvania legislature is a bill to liberalize truck weight limits. Around this bill a spirited tussle has

shaped between lobbyists of the railroads and truckers.

In Ohio, West Virginia, Indiana, and other states where trucks are permitted to load more heavily, steel shipments over the highways have increased to an even more noticeable extent.

With steel supply easing, consumers are looking to cut costs in replenishing their stocks. Yet, other factors besides cost influence steel users. Shipments by truck are usually faster than by rail and often require less elaborate and costly shrouding. When a truck arrives at a manufacturing plant the steel can be unloaded at the most convenient location, minimizing handling costs.

Availability of truck shipments makes it an easier task for a steel consumer to settle on plant location. Earlier, he was restricted to locating on a railroad line. Steel producers note that many small consumers are depending entirely on truck shipments. In the aggregate, tonnage involved is considerable.

Freed by the highway hauler from the need to locate near a rail line, many plants have been able to disperse—move away from traditional but congested centers.

Even some larger consumers would swing over to trucks if they

could be assured of a steady flow of arrivals rather than intermittent feasts and famines that tend to either jam or idle unloading facilities.

Barge space in the Pittsburgh area has been at a premium for months despite expansion of facilities. Bulk of these steel shipments go to the South and Southwest.

A new service is opening up that will provide through movement by water to Houston, Tex., at a saving of several dollars per ton over all-rail. As steel becomes more plentiful, consumers are likely to take increasing advantage of such service since full bargeloads will be available.

## Cargo Damage:

**New system dehumidifies air into holds to protect cargo.**

A new system of marine air-conditioning to combat the age-old problem of ship cargo corrosion has been developed by Bethlehem Steel Co.'s Shipbuilding Div. and Surface Combustion Corp., of Toledo, Ohio.

Called the Bethlehem Pressure System of Cargo Hold Dehumidification, the new method of removing moisture from air to prevent bulkhead sweating was tested on the *S.S. Yorkmar*. The ship recently journeyed from Philadelphia to the West Coast via Canal.

On the *Yorkmar* a Surface Combustion Corp. 7000 cu ft/min Kathabar dehumidifier used a lithium chloride base absorbent solution to condition air entering holds. Condensation occurs under certain conditions when the temperature of moist air in the hold is above that of the outside sea water. Bulkheads sweat and drip on cargo that is often corrodable or moisture-sensitive.

Loaded with 11,000 tons of finished steel at Sparrows Point, Md., last April during 10 days of constant rainfall, the ship passed through waters of widely varying temperatures. On inspection at Long Beach, Calif., a delegation found the cargo "almost completely free of corrosion from any source."





# STEEL: Green River Pours First Heat

**Pouring first heat climaxes 5 years of effort . . . New plant will use Dornin ingot process . . . Has protection of freight umbrella . . . Makes rounds up to 8½-in.—By W. V. Packard.**

One man's dream came true when Green River Steel Corp. poured its first heat of steel at Owensboro, Ky., last Wednesday.

The man is president Sidney D. Williams who, after 40 years in the steel industry, succeeded in forming his own company. At 60 "Mr. Energy" (his friends call him) feels this is only the beginning.

Green River Steel is an electric furnace plant. One 17-ft diam top charging Swindell furnace is operating now. Another will be placed in operation in a month or so. Still a third may be added later. Ingot capacity will be 200,000 tons or more per year. Finishing capacity tops this by a considerable margin.

## Have Good Site

Plant is situated on 120 acres adjacent to the Ohio River near Owensboro. Barge docks will be built to avail the plant of cheap water transport of raw materials and finished steel products.

Location is an important factor in raw material supply and price, as well as sales. Quality scrap, a dominant factor in electric furnace steelmaking, is abundant in the area. And nearby consumers will have to pay less freight from Green River than from more remote mills.

With freight rates a sizeable factor in steel costs, protection of the freight umbrella was an important factor in locating near Owensboro. Whether selling is f.o.b. mill or freight is absorbed, the competitive cost advantage holds.

Green River will produce the following sizes of quality carbon and alloy steel products: blooms, 6 x 6-in. to 12 x 12-in.; slabs; billets, 8 x 8-in., max.; bars, 2 to 8½-in.; and tube rounds, 8½-in., max.

The new firm has encountered no difficulty in booking orders, since rounds over 2-in. in diam are among the most scarce items in the steel market.

A key feature . . . the plant will

be the first to commercially produce ingots by the Dornin process. Plant is designed to operate around this process as soon as necessary presses are delivered this fall.

## How It's Done

Dornin process permits (1) production of sound ingots without hot tops, and (2) isolation of pipe cavity and segregation zone so the ingot can be cropped with minimum loss of good steel.

Green River officials hope to get ingot yields of 90 pct compared to 78 pct by conventional methods.

It works like this: Steel is melted by standard killed steel practice and poured into big-end-up molds of very heavy taper (two or three times that for hot top ingots). Ingots are stripped and sent to soaking pits. Then ingots are placed in an upsetting press where pressure is maintained for about 15 sec. They are then transferred to a forging press where each stroke covers about 10 in. of cross-section area. They are then returned to soaking pit for flash heating (about 20

min.) and are now ready for rolling.

Dornin process requires plenty of soaking pit capacity because each ingot goes to the pit twice. Green River has eight soaking pits, each able to accommodate one 60-ton electric furnace heat.

## Process Described in 1947

Both the large hydraulic presses are designed by Hydropress, Inc., New York. The upsetting press is 2500 tons and the forging press is of 1500 tons capacity. Situated adjacent to soaking pits, they are designed for maximum production of 80 tons per hour of blooms processed from 8000 and 12,000-lb ingots.

Early tests on the Dornin process were conducted at Copperweld Steel Corp. That's when Mr. Williams, then executive vice-president of Copperweld, became intrigued with its possibilities.

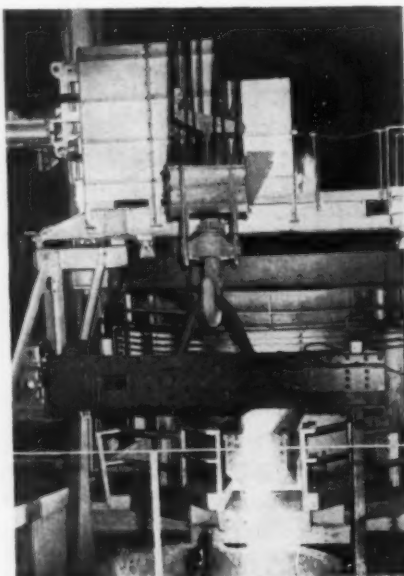
Results of the early tests were presented at an Electric Furnace Conference of American Iron & Steel Institute in Pittsburgh, Dec. 4-6, 1947. A paper on the subject was presented by George A. Dornin, Jr., who is continuing the work of his late father.

Starting a new steel mill is no easy matter, as Mr. Williams will testify. Five years passed between his first work on the project and pouring the first heat last week. In between were a lot of frustrations.

## Lick Financial Problems

Financing, one of the toughest problems in a new business costing so much, was aided by government desire to foster steel expansion after beginning of the Korean conflict. A certificate of necessity paved the way for government loans totaling some \$8.5 million. But it was also necessary to raise more than \$4 million of private funds. Bulk of this was done through underwriting of debentures by Equitable Securities Corp., Nashville. Some stock was also sold.

With intense demand for hot top quality steels showing no signs of abating, hot top facilities are generally overtaxed. And there is no sign of relief. Green River officials are counting on this to help them launch their plant in the quality steel market.



Owensboro Messenger

FIRST HEAT pours smoothly from "Big Sid" furnace at Green River Steel Corp.

# INDUSTRY: Wilkes-Barre Wants It

**Loss of coal mining, textile industries has Wilkes-Barre area aggressively searching for new industries . . . Offer new firms financial aid . . . Operation Jobs pays off.**

The story of the Wilkes-Barre, Pa., area is a familiar one—King Coal has been dethroned and large textile mills are relocating in the South.

The result for towns in this area has been loss of payrolls, mounting unemployment and declining population.

Like many other anthracite areas, enterprising civic leaders in the Luzerne County sector, which encompasses Wilkes-Barre, are trying to keep their towns alive by bringing in new industries and expanding those already operating.

## Dig Less Coal

Seriousness of Luzerne County's problem is apparent from the drop in coal production and mine employment, both of which have been slipping for more than 30 years.

In 1930, 61,114 mine employees in the area dug out 27.5 million tons of coal. Most recent figures available show that in 1951 coal production was down to 14.9 million tons, while mine employment for this year is estimated at 27,850. Due to the coal decline, population of Luzerne County from 1930 to 1953 plummeted from 445,000 to 389,200. Unemployment is hovering around the 13,000 mark.

## Created 9000 Jobs

An aggressive effort to compensate for the economic loss of the coal fadeout has been going on in Luzerne County since 1940, when the Wyoming Valley Industrial Development Fund, Inc., was formed. Purpose of the organization is to attract new, diversified industries, to aid the expansion of existing industries and to provide more jobs for men.

Though the development group has not been able to offset completely the damage of the coal slump, it is estimated that it has restored about one-third of the

dollar volume lost in coal payrolls.

With an expenditure of about \$350,000, mostly for construction of new industrial plants, the Development Fund has created 9000 new jobs in 39 firms, providing new yearly payrolls totaling \$11,304,000.

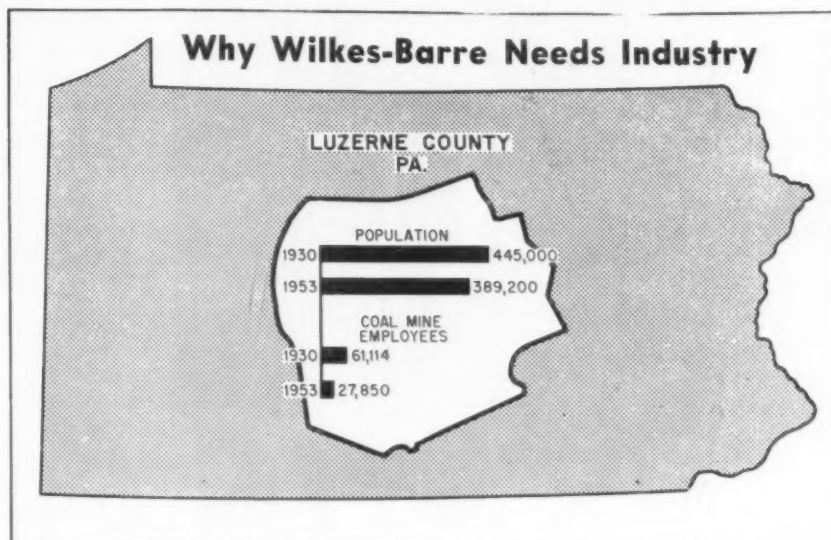
In January, 1952, the program was stepped up even more with the formation of the Committee of 100, consisting of the area's leading businessmen. Working through the

expanded. Among the new arrivals are several companies in the metalworking field: Foster Wheeler Corp., Stressteel Corp., and United Steel & Wire Co. Mangaslag Co., a processor of openhearth slag, is another recent addition to the area.

Most potent argument for the expense involved in importing industries is the long range benefits of increased payrolls. It is estimated that Foster Wheeler alone will pay out about \$15 million in wages during the next 10 years.

## What Wilkes-Barre Offers

Current projects of the Committee of 100 are to start a vocational training program to create a pool of skilled workers and to



local Chamber of Commerce and the Wyoming Valley Industrial Development Fund, the committee started Operation Jobs, designed to warm up Luzerne County's industrial atmosphere to make it more attractive to new firms.

## Adds \$15 Million Payroll

Through a recent fund drive, the committee raised \$727,000 in unrestricted gifts. This sum is being used to help new industries obtain plant sites and buildings.

Since Operation Jobs went into effect 1½ years ago, 14 new industrial firms have moved into the Greater Wilkes-Barre area, and eight established firms have been

turn a 1200-acre virgin tract into plant sites.

Aside from the financial assistance being offered by the development groups, the Wilkes-Barre area has other advantages which should interest manufacturers planning to set up new plants.

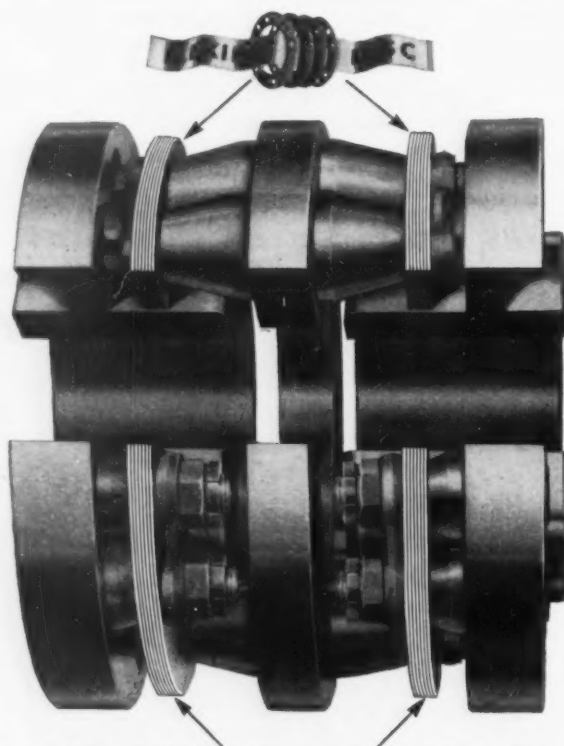
With nearly 13,000 workers in Luzerne County currently unemployed, labor is easy to obtain. Transportation facilities are good and include 20 trucking lines, 6 railroads and 4 airlines.

In addition, the area is a major shipping and distribution point for the northeastern part of the state and is ranked the third largest market in Pennsylvania.

# AVOID COSTLY SHUT-DOWNS!

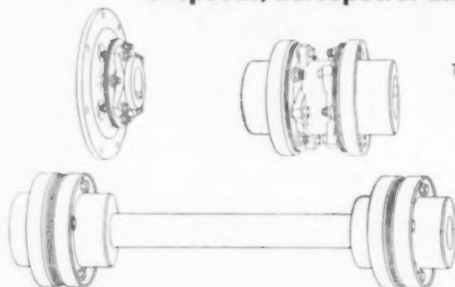
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## Salvage

### Scrap:

**Army mum on charges of competition with processors.**

The Army has not yet confirmed the rumor that it is planning to move scrap processing equipment from posts where there is insufficient scrap to justify the installation.

Rumor started last week after charges by Edwin C. Barringer, executive vice-president, Institute of Scrap Iron & Steel, before a congressional subcommittee that the \$30 million requested by the Armed Forces for salvage operations would be used for "unprofitable and uneconomic competition" with private scrap processors.

#### How Much?

The Army's G-4 section, dealing with supply, salvage and other matters, has kept quiet about its proposed action on the issue.

G-4 says it has no statistics on how much scrap metal is processed for resale each year by the Army. Figures are reported to be compiled only in separate army areas.

The Navy, on the other hand, has some revealing data on scrap produced as a consequence of its functions. On an annual basis, three naval activities generate more than 15,000 tons, and four others turn up more than 10,000 tons.

#### No Intent to Compete

"About ten" scrap balers are being operated by the Navy, which has plans to buy six more, some as replacements.

There is no intent, the Navy says, to compete with private scrap processors. But the service considers its efforts to get salvaged metal back to the smelters as an economical operation.

At present, the Institute has no quarrel with the manner in which the Air Force processes scrap aluminum from wrecked or worn-out planes. That department has an aluminum sweating furnace at Kelly Air Force Base, Tex., and intends to install two larger furnaces at other bases.



## PENSIONS: UMW Seeks Tax Exemption

**Mineworkers expected to appeal Internal Revenue ruling that benefits, income from welfare plan are taxable . . . Lewis may alter unique UMW plan—By R. M. Stroupe.**

United Mine Workers union has the problem of convincing the U. S. Bureau of Internal Revenue that benefits paid from its health and welfare fund, as well as income earned by investment of money in the fund, should be free of income taxes.

According to a recent BIR ruling only the nucleus of the fund itself is tax exempt. The agency has decided that retirement and other benefits and the investment income are subject to federal income levies.

### Plan Is Unique

This ruling appears to have no effect on the tax status of other welfare and pension plans. (The government figures there are about 22,000 private pension plans operating.) As far as insured pension plans are concerned, the ruling has no significance at all.

Reason is that the set-up of the UMW plan is unique. It had no precedent and, because the ruling appears to have been adverse, it is unlikely there will be any exact copies.

### Royalties Unaffected

When the fund was established, the union hoped the benefits would be treated as gratuities, and thus be given tax exemption. On this premise, UMW also hoped income earned through investment would be tax free.

Basic money for the fund is derived from the 40¢ royalty paid by the operators on each ton of coal mined. Annual revenue thus received is reported to be more than 100 million. This money, untaxed, is not affected by the BIR ruling.

However, individual benefits from the fund, in pension form or otherwise, are subject to taxes, as the ruling is understood. This

may not prove a hardship to a retired miner, age 65 and married, who draws his sole income from the fund, because he may claim a double personal exemption. But if he supplements his \$100-a-month pension by gainful employment, he must include his pension in reporting total income.

### May Alter Fund

More significant is the taxable position of the investment income. UMW Chief John L. Lewis may argue that miners in toto, rather than individual miners, are losers because of the ruling.

Mr. Lewis may, and probably will, appeal to the courts to throw out the BIR decision. In addition, he may have the form of the fund altered to qualify benefits and investment receipts for tax exemption.

### Must Meet Standards

To achieve tax-exempt status, a welfare fund for non-pension purposes, to take care of sick or injured workers, must meet requirements of Section 101-16, Internal Revenue Code. A pension, profit-sharing, or stock-bonus fund must conform to the standards in Sec. 165 of the code.



These criteria are numerous, but two of the most important are (1) that the fund must not discriminate in favor of highly-paid employees or officials, and (2) contributions or benefits should be subject to actuarial determination.

Just where the UMW fund fails to meet established criteria the BIR doesn't choose to say. Furthermore, officials of the fund were silent last week on what steps, if any, Mr. Lewis might take to bring the fund in line with requirements. UMW lawyers have been studying the ruling without comment, for some time.

Officially BIR will not say who presented the request for a ruling. Unofficially, however, it has been learned that UMW requested the ruling through a trustee of the fund.

### What It Pays

In the fund at this time is an estimated \$90 million. Investment income reported during the last complete fiscal year was more than \$700,000.

UMW figures show some 60,000 overage miners are drawing the \$100-a-month pensions provided by the fund. Pension programs for hard and soft coal miners are separate, but financing is the same.

### Affects 1 Million

In addition, the fund allows death benefits for widows and monthly payments to disabled miners and their dependents. All told, 1 million persons may have received money from this source over the years.

Since 1948, the total amount paid in benefits has been about \$500 million. Sums paid prior to this calendar year, however, are not affected by the government decision.

If the union must provide the Bureau with a statement of benefits paid to each person since 1948, a great load of paper work will be involved—both in UMW fund headquarters and in the government.

# VACATIONS: Industry Takes Breather

**Vacation shutdown becomes industrial institution . . . Trends of various industries . . . Steel industry watches Sharon Steel vacation experiment results closely—By J. B. Delaney.**

The vacation shutdown has become an industrial institution. With metalworking companies in general there are no hard and fast vacation rules—but the trend has been toward vacation shutdown.

In the steel industry there's an old saying that blast furnaces and openhearths must never rest. But with Sharon Steel Corp.'s shutdown experiment there seem to be no sacred cows left.

The production spurt in June was partly credited to industry's desire to keep its products moving while plants closed for vacation. Other firms with "soft" markets seized on the vacation period as a breather.

A recent survey of industrial fastener companies indicated that 55 companies would shut down and 28 would stay open.

## Study Sharon Results

Some component suppliers have no choice in vacations. If their biggest customers decide to stay open to catch their full share of current demand, they must keep on the job too. If the big customers shut down, they often follow suit.

The steel industry is taking a close look at results of the Sharon Steel shutdown experiment. Sharon closed continuous operations early this month to enable most of its 8000 production workers to vacation en masse. Feeling of the steel industry in general has been that banking openhearths and blast furnaces would be dangerous and costly.

But Sharon thinks its experiment will be a success. Henry Roemer, Jr., president, predicts on the basis of preliminary results that the company will adopt the plan as a permanent vacation policy. He emphasizes that other steel-makers will not necessarily be able to get the same favorable results

with the Sharon method.

For the steel industry in general, vacation time means a reduction in its working force, shuffling men around. Although the industry has about 4 to 5 months in orders, vacations, hot weather, and maintenance problems will push the ingot rate below 100 pct. For the week of June 28 the ingot operating rate was 92 pct of capacity and for the week of July 5 the rate was 95 pct.

Other steelmakers are interested in the results claimed by Sharon. These are: (1) Openhearths and blast furnaces were not harmed; (2) necessary major repairs were made and several potentially serious maintenance shortcomings uncovered and corrected; (3) overtime payments and double shifts peculiar to staggered vacation plans were eliminated, and (4) with a thorough maintenance job completed, downtime for balance



TYRO GOLFERS get hep to swing of things when the Swingroov corrects their whack at the pill. Attached to waist and arm the device is made by Swingroov Co., Dumont, N. J.

of year will be kept to a minimum.

At least two other steel producers—Rotary Electric and McLouth—have adopted the vacation-shutdown plan. Both are electric furnace shops.

With these exceptions, the industry prefers to stagger vacations where continuous operations are involved. Some companies shut down finishing operations for vacation periods except where they are closely tied in with melt shops. U. S. Steel and Crucible have this policy.

## Westinghouse Policy

If it were that easy, the industry probably would prefer to close plants rather than maintain operations by staggering vacations. The staggering plan involves plenty of scheduling and production headaches. Producers nominally encourage workers to take their vacations rather than pay in lieu of it. But as a practical matter, production supervisors would just as soon keep their crews intact.

Among appliance manufacturers, Westinghouse Electric Corp. prefers to shut down its production-line plants and keep its job shop units operating. But even here there are exceptions, often-times due to years-old custom.

Automobile producers stagger their vacations. It used to be that vacations were taken without pay—during periods of downtime for model changeovers. But since advent of the union contract, vacation clauses and reduction of changeover time, vacations are scheduled so that operations are maintained.

Stamping companies generally follow the vacation shutdown pattern. At least that was the trend several years ago when a survey of vacation policy was conducted.

Machine tool builders for the most part close up shop. Gray iron foundries, steel foundries, and malleable foundries do likewise. Most die casting shops continue operating; about a third shutting down. In the drop forging industry, trend is toward shutdown.

Aluminum producers prefer to stagger vacations.

## DESIGN: Standardize for Profits

**Product, process standardization can mean substantial savings in manufacturing . . . Product mix can be simplified without flexibility loss . . . How GE does it—By G. G. Carr.**

It's only natural to try for a broader share of the market by adding new products to your line. But you might think about the possibilities of standardization before you put that next new model into production. Redesigning for fewer, more versatile models may give you substantial savings.

To be really effective, standardization should start on the drafting board, permeate all phases of manufacturing. Roger E. Gay, president, American Standards Assn., recently pointed out that unfavorable economic forces such as spiraling wages and high production costs cannot be offset with present equipment, taxes and capital requirements.

### Not Too Small

"One means of meeting this situation is by lowering the unit cost of products still further by a sharp increase in efficiency, particularly by standardizing every operation, every process, every component we possibly can," Mr. Gay said.

Most companies make a stab at standardizing raw materials, if only to simplify buying and inventory. And designers are encouraged to work with what's on hand wherever possible. But many companies feel that intensive standardization is only for high volume mass production industries like automobiles.

General Electric's Meter & Instrument Dept. is a good argument against that type of thinking. Standardization is an overall GE policy, but the products of Meter & Instrument's West Lynne, Mass., Works are complex and specialized, must fit many custom applications.

At first glance this wouldn't seem like too fertile ground for standardization, particularly since the department is hard at work

on military aircraft instruments. But the facts prove otherwise.

An intensive standardization program has paid substantial dividends to both GE and the taxpayer. Costs on some aircraft instruments have been cut over 20 pct. And redesign of non-military items has saved for GE all the way down the line.

C. Howard Black, manager of the department, stresses that all concerned must cooperate to make a standardization program effective. It can't be limited to any one area.

### Standardized Slides

Meter & Instrument's program begins, properly, in the stockroom and on the drawing board. Its punch press section, for example, found that 4 out of 47 or 8.4 pct of steel gages carried in stock accounted for 39 pct of the total steel inventory. By designing to use these four gages wherever possible, inventories were substantially streamlined.

Redesign solved a bothersome fabrication problem for the punch presses. Different makes of press had varying types of slide. This

meant that the anvil and slide had to be designed together for each job on any press. GE engineers worked out a new slide to fit all presses.

Sometimes standardization lets you have your cake and eat it too. An appalling number of costly special transformer orders were coming into West Lynne Works. Careful analysis of these orders showed that 70 pct could be filled by standardized models.

Since then, the number of draftsmen assigned to special transformer orders has been cut one-third, with another cut of the same size scheduled for the near future.

When the Navy asked for special shockproof mountings on switchboard instruments, it meant adding another model to the line. Redesign made it possible to equip all models with shockproof mountings and still save money. Standardized mountings lowered costs by eliminating special handling.

### "Beautiful Butyl"

New materials often mean new chances for standardization. When butyl first showed signs of being a good insulating material, GE engineers watched it carefully. Now they call it "beautiful butyl."

A new butyl-molded transformer replaces four standard models. The new insulation allowed redesign to eliminate over 300 parts from inventory. One model made straight line assembly and conveyor use possible for a substantial saving in manufacturing.

How much does standardization actually save? GE officials candidly admit that some savings can't be figured in dollars and cents, must be taken on faith. But Mr. Black cites these impressive figures:

Since the start of the Korean conflict, increases in basic materials and labor costs would have raised gross costs of meter and instrument products by amounts varying from 19 to 32 pct, depending on the specific product involved. Thanks in large part to the intensive standardization program, prices have increased by amounts totaling only 12 to 23 pct.



"Funny part is his work always passes inspection."



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## Production

## ELECTRIC STEEL: Peak Prod

Shipments in 4 months run at  
annual rate of 850,000 tons  
. . . Market's expanding.

Electrical sheet and strip producers are heading for their biggest year. Shipments in first 4 months were at the annual rate of approximately 850,000 tons. Best previous year was 1951 when 757,861 tons were shipped.

There are some signs that business is tending to level off after a hectic 6 months. Yet, virtually all producers are predicting capacity operations for the balance of the year. Third quarter order books are filled and fourth quarter business is coming in strong.

## Market Expanding

The industry apparently has been able to supply demand without causing any undue hardship to consumers. Some appliance makers say they cannot get enough fractional horsepower motors, but this could be due to lack of motor capacity rather than lack of electrical steel.

Reason for all the good cheer is expanding requirements of the electrical industry and increasing use of electrical appliances and equipment in homes and factories.

Part of the early-year buying rush was due to hedging against a possible strike in steel, but peaceful settlement of labor negotiations took some of the urgency out of the picture. High-level first half production of manufacturing in general was the most influential factor in setting up brisk demand for electrical steel.

## Video Eager Customer

Demand from the industry's mainstay, producers of fractional horsepower and heavy motors, is good. The motor industry accounts for roughly 50 pct of electrical steel sales. Transformer manufacturers, who consume 25-30 pct of production, are easing up somewhat on their orders. But the communications field, which uses 20-25 pct of output, is going strong.

TV business is thriving. Produc-

## Production Prospects

### Electrical Sheet And Strip Shipments (net tons)

1949—379,180\*  
1950—716,592  
1951—757,861  
1952—607,076  
1953—850,000\*\*

\* Electrical sheets only in 1949  
\*\* Estimated; projected on basis shipments  
282,746 tons in first 4 months

tion this year probably will run about 6-7 million sets. The average set contains between 10-15 lb of silicon steel. Another reason for smiles of electrical steel sales managers is the booming air conditioning business. Room unit sales are expected to reach 650,000 this year; residential systems 45,000; commercial units over 100,000.

### Demand Strong in Coils

Each unit uses one or more motors. Merchandisers of air conditioning equipment have grown from 15 to 17 several years ago to 72 today.

Demand is strongest for sheets and strip in coil form for convenience in running through lamination stamping machines. Only soft spot is in cut lengths produced on hand mills.

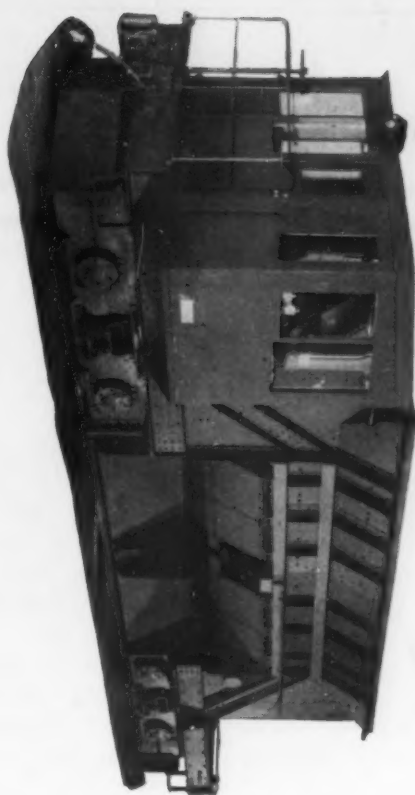
### Concern Over Foreign Competition

Foreign-aid planners promise to "look into" reports that Britain plans to dump about 75,000 tons of copper on U. S. markets this summer.

Mining-state senators, already alarmed at Britain's sale of 30,000 tons of lead to the U. S. at below-market prices, are demanding that Mutual Security Administration "do something" about this type of foreign competition.

Says MSA Administrator Harold Stassen: "I will get to the situation promptly and see what I can do."

Senator Henry C. Dworshak, R., Ida., says he believes countries like Britain, which have received U. S. aid, should "be interested in helping us, too."



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## CASING: Finishing Is Automated

**Pittsburgh Steel's new \$2 million casing finishing department features automatic handling . . . Power feed tables, conveyors speed output . . . Test bench is heart of operation.**

With demand for oil country steel goods still at a peak, and supply still inadequate, high speed and high quality are production musts.

When Pittsburgh Steel Co. laid out its new casing finishing department at Allenport plant, primary considerations were quality, automation, and speed. The department has been in operation over 2 months. Results indicate that the line is living up to expectations.

### Testing A Must

If casing is to properly do its job of protecting the drill pipe which travels inside it, high quality steel and accurate threading are essential. Rock pressures in-

side an oil well run as high as 7000 psi, and the casing must also support its own weight of as much as 270 tons dead load.

Since casing can't be allowed to fail, testing is at the heart of its manufacture. Pittsburgh Steel's new \$2 million operation is built around the Taylor-Wilson hydrostatic test bench will process a length of casing in less than 40 seconds, including kick-in and kick-out at 3500 to 4000 psi. Maximum test pressure is 10,000 psi.

### Conveyors Speed Handling

Four Stamets threaders can thread both ends of a length of casing in a little over 1 minute. Taylor-Wilson automatic feed tables carry the lengths to the machines.

Processing time from threading to automatic painting is 10 to 15 minutes. Automatic feed tables and conveyors simplify handling. Operations include threading, inspecting, coupling, hydrostatic testing, weighing, measuring for length, stamping, equipping with thread protectors, and painting.

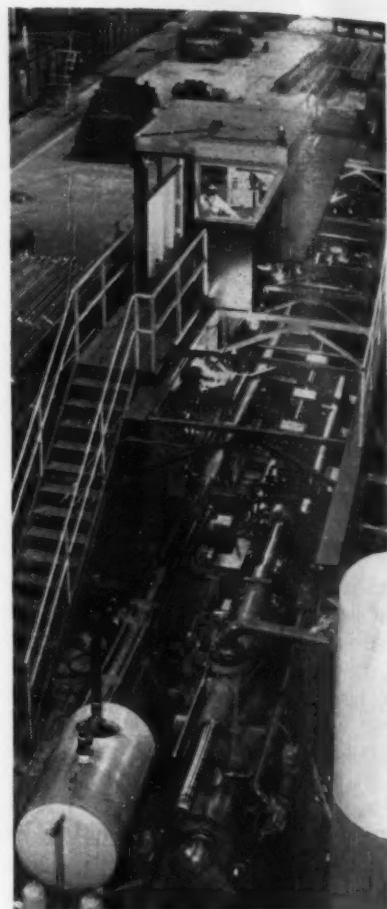
### Fully Automated

Unique feature is a coupling screw-on machine, believed to be the first of its kind in industry. Built by United Engineering & Foundry Co., the machine speeds up coupling operation, reduces labor. Normal production rate is 1 every 40 seconds. Torque varies with size and grade of casing in production. Range is 4500 to 7000 torque foot pounds.

Automation is carried through to applying the protective coating of lacquer to the casing. This Gyromat machine, one of five in industry, coats a 32-foot section of casing in 5 seconds. Thickness of coating may be varied depending on protection desired.



UNIQUE feature of Pittsburgh Steel Co.'s casing finishing department is use of an automatic coupling screw-on machine.



MAN IN PULPIT controls the operation of a hydrostatic pipe tester. Test pressures up to 10,000 psi are used.

The casing finishing department is part of Pittsburgh Steel's \$62.8 million expansion program. The line will process up to 800 pieces in 8 hours. Ultimate monthly production goal is 10,000 to 12,000 tons.

The company's streamlined operation places them in better position to meet sharper competitive conditions expected in fourth quarter or first quarter of 1954. Production is sold out for third quarter but there is some uncertainty over last 3 months of the year. Most companies have not yet thrown open fourth quarter order books. Oil well drilling operations are running slightly under last year at this time.

Contributing to stronger competition in the field is the addition of new producing facilities, including those of Colorado Fuel & Iron, Republic Steel and Lone Star Steel.



# STEEL: Denationalized, U. K. Confident

British steelmen optimistic about future . . . Production is mounting, demand strong . . . See little to fear from Schuman Plan . . . Start second phase of expansion.

End of the nationalized steel experiment early this week found British steelmen confident of their industry's future. Production is rising steadily, domestic demand is greater than supply, and an ambitious second round expansion program has been started.

There is some concern about the possibility of stiffer competition from Schuman Plan steel producers, but the British believe it will be many years before the Schuman steel plant can be expanded sufficiently to pose a real threat to their own industry. They are also confident they can keep prices below those quoted on the Continent.

## Profits Create Confidence

Some British steel producers fear these cozy prospects could cool suddenly if the U. S. were to make interest-free dollars available to the Schuman Pool. Reports that the U. S. may loan \$250 million to the European Coal, Steel Community this fall have not been well received in Great Britain.

But as the steel industry reverts to private ownership (first sale of stock is expected in September) these misgivings are cushioned by the government's recent report that steel profits for the year ending last September were \$180 million before taxes.

Sign of the growing strength of Britain's steel industry is increased production. Output last year reached a record 16.4 million long tons and has continued to rise this year, hitting an annual rate of 18.2 million tons in June.

Production of Britain's 28 pct iron ore is now 17 million long tons per year, close to present mining capacity. Pig iron production has been stepped up considerably, and imports of rich ore, mainly from Sweden and French North Africa, were upped more than 1 million tons last year.

It is estimated that Britain's steel production this year will set another record, with output totaling 17.5 million long tons. Reason for the continuing increase in production is success of the steel expansion program started in 1945. Main objective of the plan was to build up pig iron production to put it in balance with openhearth capacity.

Britain is now starting the second stage of its expansion and is basing its plans on estimates of steel demand in 1957. Target for that year is production of 20 million tons of steel. To reach this goal, \$980 million will be spent on new construction and replacements.

Overall production of finished

steel products is slated to rise 22 pct, with sheet, tinplate, tubes and light rollings scheduled for major increases.

Ore production is to be pushed up to 20 million tons per year by 1957, and ore imports are scheduled to reach 16 million tons, nearly double last year's figure.

Major share of new investment in the second phase of the steel expansion will go to the big producers. The Steel Co. of Wales, at Margam in South Wales, will spend \$127.4 million for blast and openhearth furnaces to keep its new hot mill supplied. Dorman, Long & Co. will spend more than \$100 million to install two large blast furnaces at Cleveland and an openhearth furnace at Lackenby.

## Will Keep Price Edge

Much of Britain's confidence that it will be able to meet Steel Pool competition is based on the low price of its steel products. British price for ship plate is around \$83.60 per ton, while the Schuman Plan countries sell it for about \$105. In Italy, the price is \$140. Merchant bars in the United Kingdom are quoted between \$84 and \$88.80 per ton, while the price on the Continent is around \$91.

Other important factors are cheap labor and increased productivity. The average British steelworker gets about \$27 per week, less than in many competing countries, and because of its modernization program, Britain is now producing 50 pct more steel than before the war with substantially the same labor force.

# STEEL INDUSTRY SLUMPS ON CONTINENT

	In June, 1952 order backlogs were (tons)	... but now they are: (tons)	Operating rates were: (pct of cap.)	... but have dropped to: (pct of cap.)
Germany	7,399,740	3,428,153	92.8	71.3
France	4,759,731	2,114,211	94.3	86.8
Belgium	2,166,020	1,161,824	92.7	82.5
Luxembourg	929,239	675,710	94.2	87.4
Saar	1,557,550	856,487	89.7	79.7
Italy	1,027,344	695,551	93.8	91.8
<b>TOTAL</b>	<b>17,789,624</b>	<b>8,931,936</b>	<b>Avg. 92.9</b>	<b>83.3</b>

# MOBILIZATION: Flemming States Policy

**Defense Mobilizer wants broad mobilization base . . . Calls for sufficient production capacity to meet both all-out war and civilian needs—By A. K. Rannels.**

Future government policy will be to aim for a broad mobilization base to insure production in the event of a major war.

This was made plain last week in the long-awaited policy statement issued by Defense Mobilizer Flemming.

Bearing the approval of the Eisenhower Administration, the policy calls for creation of sufficient industrial facilities to round out production potential to meet both war and civilian needs.

## Hunt for Gaps

Specific details as to how this is to be attained are still in flux. They won't be definitely decided until after Office of Defense Mobilization has completed a study it is now making. Aim of the study is to show:

Productivity of industry "for hypothetical war years," as well as the amount of support to be expected from Allies; rock-bottom civilian requirements under war conditions; ability of industry to supply "principal tools, equipment, components, materials, skills" during such a period.

In effect, ODM is looking for holes in the industrial expansion programs of the past 3 years. Then it will make concrete plans to plug the gaps.

## Cancel Kaiser, Phase Out Ford

At first glance, this appears contrary to views of Defense Secretary Wilson, reported to favor a narrower mobilization base, a plan that has been supported in recent Pentagon moves.

Notable examples are the cancellation of Kaiser aircraft contracts in favor of Fairchild, and a more recent announcement that Ford tank and truck production is to be "phased out," leaving only Chrysler and Fisher in the running.

Actually there are certain points of similarity in the two views. Dr. Flemming is primarily interested in maintaining sufficient production capacity to meet both war and civilian needs. Secretary Wilson is most concerned about reducing the number of firms doing defense which would spread production over a longer period of time.

However, under the Wilson plan, plants that have been cut in the defense program will be requested to keep their production equipment on a standby basis. Result would be that the production capacity Dr. Flemming wants would be maintained.

## Leave Tools in Plants

Main problem created by these mobilization plans is what to do with the idle equipment. The Pentagon wishes it had the answer because during the next 15 to 18 months it will have to decide what to do with 60,000 machine tools and other items from at least 12, perhaps more plants.

Ideal solution would be to leave them in the plants, but in many cases this won't be possible. The

Pentagon has asked Congress for a sizable sum with which to renovate and store such items.

ODM policy statement also indicates that the Vance Plan for stockpiling capacity rather than end military items is much closer to being put into operation than many skeptics believe.

It is expected that the ODM survey will show that to establish a broad mobilization base, major needs will lie in the machine tool and allied capital equipment fields, particularly for items such as heavy presses and other long lead time items having few civilian production applications.

## Contracts Reported Last Week

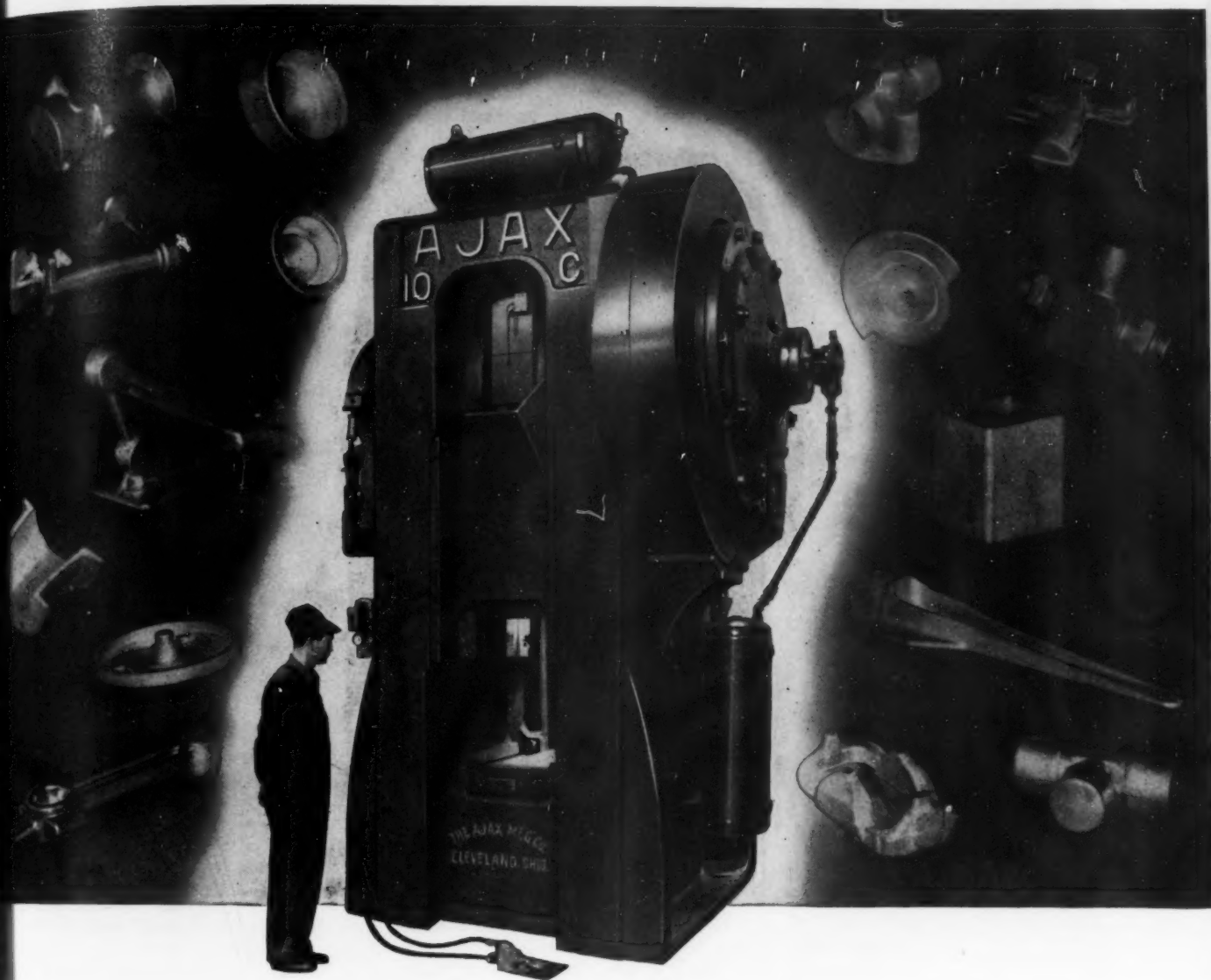
Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Spare parts for Diesel engines, 88 line items, \$75,411, General Metals Corp., San Francisco.  
Rifle, target, Winchester M52, 905, \$34,536, Winchester Repeating Arms, New Haven, Conn.  
20 MM, M96, shell, 4500000 ea, \$807,750, Harvey Machine Co., Torrance, Calif.  
20 MM, M97, shell, 6000000 ea, \$1,098,000, Harvey Machine Co., Torrance, Calif.  
57 MM, shell, 724000 ea, \$1,005,849, Harvey Machine Co., Torrance, Calif.  
Casing, burster, 529000 ea, \$586,396, Hunter Douglas Corp., Riverside, Calif.  
Links, metallic, 30 caliber, 134355500 ea, \$722,544, Kwikset Locks, Inc., Anaheim, Calif.  
Panoramic telescopes, 37 ea, \$121,272, Northrop Aircraft, Inc., Anaheim, Calif.  
Panoramic telescopes, 16 ea, \$52,442, Northrop Aircraft, Inc., Anaheim, Calif.  
Case, cartridge, 256000 ea, \$320,913, Norris-Thermador Co., Vernon, Calif.  
Case, cartridge, 125000 ea, \$2,500,000, Norris-Thermador Co., Vernon, Calif.  
Case, cartridge, 732000 ea, \$2,093,490, Norris-Thermador Co., Vernon, Calif.  
Assembly, head for fuze, 90000, \$151,200, Wohler Corp., Lansing, Mich.  
Automotive electrical engine parts, 23965 ea, \$137,667, General Electric Corp., Flint, Mich.  
Scaffolding, 23025 ea, \$86,237, The Patent Scaffolding Co., Inc., Los Angeles.  
Measuring system, 33 ea, \$75,031, Potter Aeronautical Co., Newark.  
Box, ammunition, 1104700, \$1,687,396, Follansbee Steel Corp., Follansbee, W. Va.  
Misc. parts for booster, var, \$1,297,523, John R. Wald Co., Inc., Huntingdon, Pa.  
Air compressors, 5, \$90,151, Joy Mfg. Co., Pittsburgh.  
Howitzer assy, \$5,983,671, Yuba Mfg. Co., San Francisco.  
Shell, chemical, 105 MM, 310000 ea, \$2,294,000, Kohler Co., Kohler, Wis.  
Fuze, Pd, M48A3, 773820, \$1,320,142, Speed-O-Print Corp., Chicago.  
Fuze, Pd, M48A3, 2970000 ea, \$4,677,750, Rulon Co., Chicago.  
Case, cartridge, brass, 3650000, \$696,785, Nesco, Inc., Milwaukee.  
Case, cartridge, brass, 3913600, \$747,087, Nesco, Inc., Milwaukee.  
Kit repair air pack power brake unit, 14400, \$149,760, Bendix Aviation Corp., South Bend, Ind.  
Primer, percussion, 1000000, \$299,500, North Star Specialties, Inc., Minneapolis.  
Gun filler oil recoil, 10600, \$160,590, Stewart Warner Corp., Chicago.  
Fuze, bomb, mechanical time, 105000 ea, \$593,880, Merkle Metal Products Corp., Chicago.  
Fuze, 3000 units of 100 ea, \$234,000, International Register Co., Chicago.



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## Industrial Briefs

**West Coast Warehouse . . . SANDVIK STEEL INC.**, New York, has established a new warehouse and sales office at 3609 E. Olympic Blvd., Los Angeles.

**Gets Contract . . . INGALLS IRON WORKS CO.**, Birmingham, has been awarded a contract for 6500 tons of fabricated steel for the John Sevier steam plant of the Tennessee Valley Authority.

**Steel Rope . . . CANADA WIRE & CABLE CO., LTD.**, has purchased the factory formerly owned by Hollands (Canada) Ltd., in Smith Falls, Ont., to house its steel rope operations.

**Across the River . . . LATROBE STEEL CO.**, Latrobe, Pa., has acquired warehouse and office facilities at 741 Ramsey Ave., Hillside, N. J., and will include the sales office now located in New York City.

**New Venture . . . GENERAL MOTORS CORP.** released the first issue of its GM Engineering Journal recently. It is only an experimental number but through its development they hope to begin regular production in September and every other month following that.

**Interest Acquired . . . H. K. PORTER CO., INC.**, Pittsburgh, has acquired a controlling interest in A. Leschen & Sons Rope Co., St. Louis.

**Going Up . . . WESTINGHOUSE ELECTRIC CORP.** will build a plant at 9320 Grand Ave., Duluth, Minn., to service and repair electrical equipment.

**Sold . . . HOOKER ELECTRO-CHEMICAL CO.** has purchased Marble-Nye Co. of Worcester, Mass. It will be a wholly owned subsidiary.

**Controlling Interest . . . ARTHUR D. LITTLE, INC.**, Cambridge, Mass., reports that the employees' trust has acquired controlling interest in the company. This was brought about by an offer from the employees' retirement trust to purchase common stock from individual holders.

**Alaska, Here We Come . . . GENERAL ELECTRIC CO.** has appointed the Northern Commercial Co. the first agent and distributor of its apparatus products in Alaska.

**Outstanding Man . . . Willard F. Rockwell, Jr.**, president, ROCKWELL MFG. CO., Pittsburgh, was selected as one of Pittsburgh's "100 Outstanding Young Men," by a committee of civic leaders this week.

**Next Week . . . NATIONAL MACHINE TOOL BUILDERS' ASSN.** and the American Machine Tool Distributors' Assn. will hold their ninth annual Machine Tool Sales Conference from July 20 to July 24 at Purdue University, Lafayette, Ind.

**Sales Office . . . INTERSTATE STEEL CO.**, Evanston, Ill., has established a sales office at 208 East Wisconsin Ave., Milwaukee.

**Building Site . . . ALLOY RODS CO.**, York, Pa., has started construction on a new plant in El Segundo, Los Angeles County, Calif.

**Going Up . . . OTIS ELEVATOR CO.** is celebrating its 100th anniversary this year has made public a centennial report which shows that the company did more business in the first 3 months of 1953 alone than was done in its first 46 years.

**Underway . . . CONTINENTAL CAN CO.**, Los Angeles, is constructing a large storage warehouse on Downey Road at Leonis Blvd., Vernon, Calif.

**Sales Up . . . WILLYS MOTORS INC.**, Toledo, reports that sales of Willys passenger cars increased 100 pct in the first 4 months of 1953 in comparison to the same period in 1952.

**Nominated . . . AMERICAN SOCIETY OF MECHANICAL ENGINEERS** has nominated Lewis K. Sillcox, vice-chairman of the board of The New York Air Brake Co., for president for 1953 of the society.

**Awarded . . . GEORGE J. HAGAN CO.**, Pittsburgh, has been awarded orders to furnish the forging furnaces for U. S. Hoffman Machinery Corp.'s huge shell plant in Scranton, Pa.

**New Showroom . . . INDIANAPOLIS MACHINERY & SUPPLY CO.** has opened a New York Showroom at 186 Grand St. for new and used machine tools.

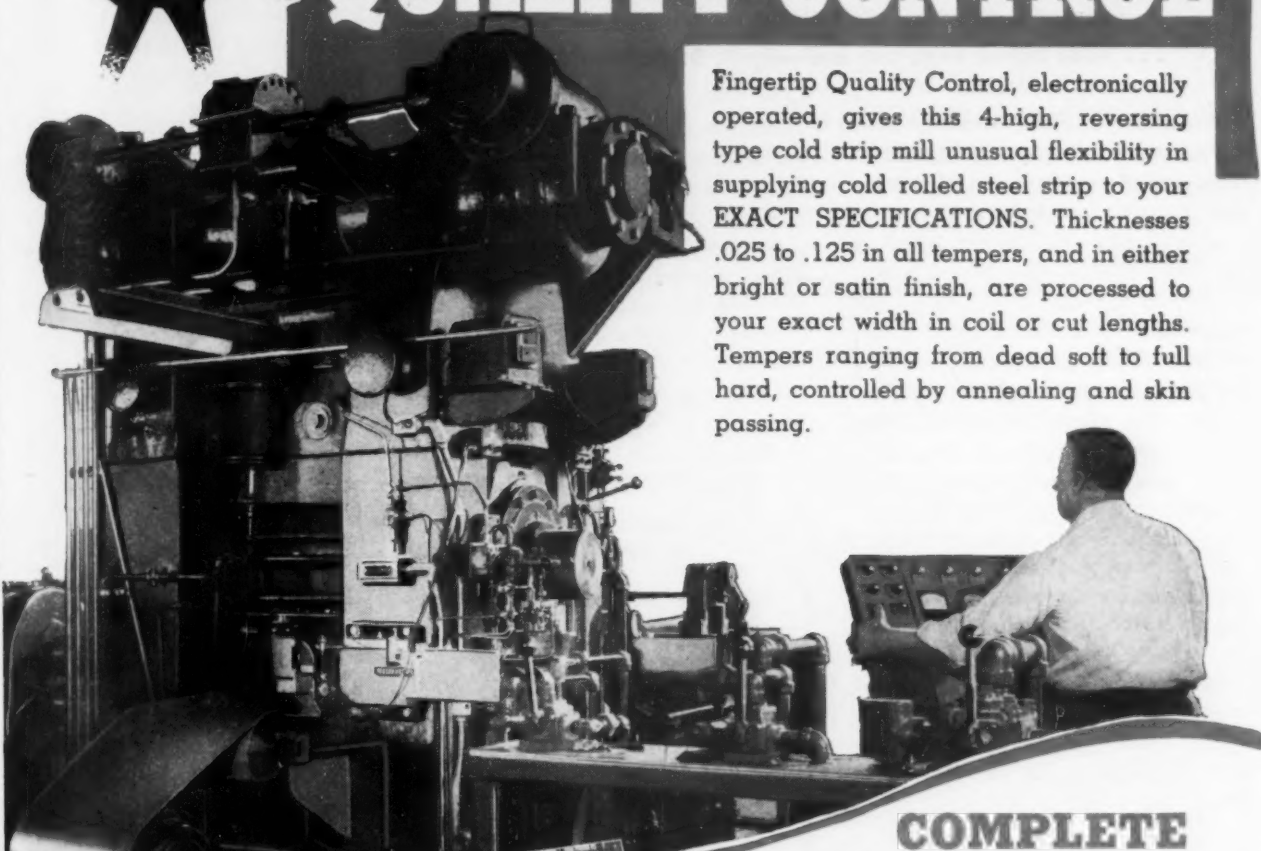


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1050 Military Rd., Buffalo 17, N. Y.  
Phone: RIVERSIDE 7920

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PRODUCTION STEEL COMPANY  
548 W. Mechanic Street, Jackson, Mich.  
Phone: 2-9097  
Glenn Christman, Sales Representative

PRODUCTION STEEL CO. OF ILLINOIS  
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Phone: BLuemound 8-8323  
Warren P. Bidwell, Sales Representative

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Dean Hethington, Sales Representative

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Phone: 5759  
S. N. Olmsted, Jr., Sales Representative

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Tony Canadeo, Sales Representative

# The Automotive Assembly Line

## Freed Moly Juggles Steel Specs

**Molybdenum decontrol brings quick revision of auto alloy steel specifications . . . But nickel controls hinder switchovers . . . Auto boron steel use low—By R. D. Raddant.**

A lot of juggling of alloy steel specifications took place in Detroit when molybdenum was lifted from the restricted list July 1.

Among automakers the juggling was not uniform when molybdenum—next to the last metal to be decontrolled—was finally freed from controls. There are as many different philosophies on alloy steels as there are manufacturers. Even within some companies the divisions exercise their independence in making alloy specifications.

**Still Need Nickel . . .** Automakers who favor straight molybdenum steels hurried to dump temporary triple alloy specifications and return to their former specs. Others, never heavy users of molybdenum, made scarcely no immediate revisions in alloy steel practices.

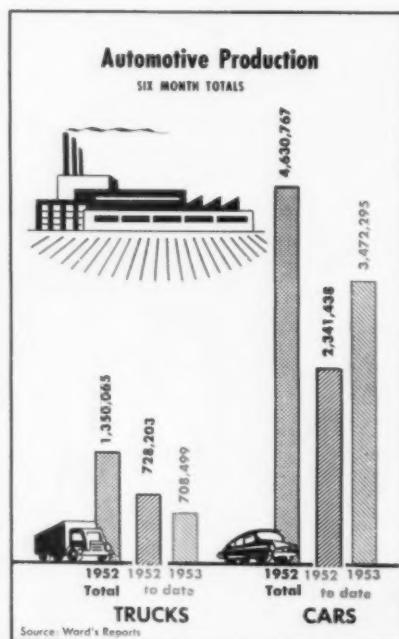
The fact that nickel is still strictly controlled prevented even more wholesale shifting of alloys. No one has yet been able to return to the nickel-molybdenum steels or high nickel, triple alloy steels that many favored before Korea.

**Use Temporary Specs . . .** Molybdenum and nickel were placed on restriction at the start of the Korean war. This eliminated for civilian use the SAE 4000 series of straight molybdenum steels and all Amola steels. The SAE 4600 nickel-molybdenum series was also restricted and temporary specifications (TS) using a higher chromium content replaced SAE 8600 and other alloy series.

Chrysler, which originally developed Amola steels, was the heaviest automotive user of molybdenum. In general, Chrysler divisions are shifting immediately to Amola steels, with some excep-

tions where the substitutes proved satisfactory and possibly resulted in a cost saving.

**Keep Some . . .** Almost every auto company will retain some substitutes for original alloy specifications. Triple alloy steels were found to work successfully for some parts where they had not been used before. Certain gears



and axle shafts are examples. Others found straight chromium alloys eminently usable for springs, knuckles and possibly some other parts.

"Dollar metallurgy" also figures here. In some cases substitutes resulted in cost savings, while increases in alloy extras discouraged a return to former specifications.

Before the emergency Ford used straight molybdenum steels and SAE 8600 series. Restrictions forced the use of SAE 8100 steels

or the TS 8600 high chromium triple alloys. Ford will now return to straight molybdenum steel for rear axle shafts, transmissions and other parts. Some of the TS 8600 steels were well liked at Ford and may not be replaced.

**GM Used Little . . .** General Motors divisions had not been very heavy molybdenum users, have probably altered specifications less than most. Chevrolet, for example, specified SAE 8600 steels for most alloy parts. Some divisions have found SAE 4100 chrome-molybdenum steels satisfactory for axle shafts and certain gears.

In general, relaxing of molybdenum without freeing nickel created no great revolution in Detroit. But it is now freely rumored here that nickel will be off restrictions by November.

**Boron Unpopular . . .** Boron steels, which created a big stir not long ago, never gained the expected widespread automotive use. It is generally believed that boron steels make up about 10 pct of all alloy steels in industry. The percentage is far less in the auto industry, where boron steels are largely restricted to bolts.

New developments in Detroit may do more to revise the alloy picture. Axle shafts of carbon steel may be induction hardened in the near future and other methods are being developed for hardening gears and other alloy parts.

**Financing Completed . . .** A combination of automotive money and insurance money will bring Detroit its third integrated steelmaking operation.

Officials of the McLouth Steel Co. have announced that the proposed \$105 million financing (THE IRON AGE, May 28, p. 85) has been completed. The expansion will increase capacity from 550,000 to 1,200,000 ingot tons.

McLouth is a principal supplier of flat-rolled and stainless steel to



the auto industry and \$25 million of the financing was put up by General Motors. Another \$2 million was financed by American Metal Products Co. Insurance companies and a group of banks completed the financing.

**Only One . . .** Great Lakes Steel Corp., a division of National Steel, has been the only integrated mill operating independently in Detroit. McLouth and Rotary Electric Steel Corp. are electric operations while the Ford Motor Co. has its own captive integrated mill.

Unusual feature about McLouth's expansion is that no openhearth furnaces are contemplated. Ore docks and a blast furnace will be constructed, but a bessemer converter will be used, with the hot metal going from the converter to electric furnaces.

## Cutbacks:

**Defense cancellations could cause bad slump in Detroit.**

Severe cutbacks in spending by the Detroit Ordnance Tank-Automotive Center forecast a gloomy future for defense orders here.

The center is national planning headquarters for all Army tank and truck production. A large percentage of its contracts go to the auto industry and cutbacks in the center's spending will be seriously felt.

### Low Bidder Only

Current spending of the center is \$160 million a month. Under cuts already announced, rate by next spring would be only \$90 million a month. But cuts now being prepared will reduce this figure to about \$50 million a month by spring, a total drop of \$110 million a month from the present rate.

It is understood that the reductions will cut out all but one producer of each type of tank and truck and limit contracts to the low bidder.

### Mothball Chrysler Plant

Combined with the recent cancellation of Kaiser's aircraft contracts, the cuts can cause a serious

Automotive Production (U. S. and Canada Combined)		
WEEK ENDING	CARS	TRUCKS
July 11, 1953 . . .	143,788	24,252
July 4, 1953 . . .	123,048	17,443
July 12, 1952 . . .	58,597	12,019
July 5, 1952 . . .	68,375	15,677
*Estimated Source: Ward's Reports		

slump in the Detroit area. The Kaiser cancellation started rumors that Detroit was being blacklisted for defense orders because of high labor costs. But there is no indication that this had any connection with the latest announced cutbacks.

About 3700 workers at the Chrysler tank plant here will be idled when the current contract for M-47 tanks is completed. The government intends to put this plant in mothballs on a standby basis.

### Some Unaffected

Other curtailments will hit 2½-ton truck production. This will be limited to either GM Truck and Coach Div. or Reo Motors. Bids have been asked from both for July 25. Other tank plants to be affected

are the Ford and Fisher Body tank plants, both of which produce M-48 tanks.

Other smaller programs such as engine programs and anti-aircraft vehicles will also get reductions. The Willys Jeep, the Dodge ¾-ton weapons carrier, and Pontiac's Otter are apparently unaffected.

## New Extras Boost Auto Steel Most

After analyzing the recent increases in steel prices, some automotive purchasers have reached the conclusion that the increase in extras will cost them more than increases in the base price.

Figuring out exactly what steel price increases mean across the board is a near impossibility. The complexity of sources, kinds of steel, and the staggering task of figuring steel costs in manufactured parts defy an exact figure.

Steel purchasers in one of the largest automotive companies have estimated that the increase in extras cost them \$7 a ton on the basis of all steel purchased. Base price increases were estimated at about \$5 per ton.

## THE BULL OF THE WOODS

By J. R. Williams



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milling requirements**

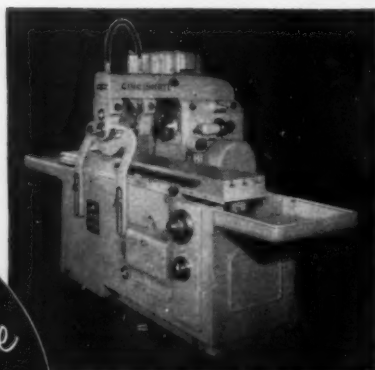
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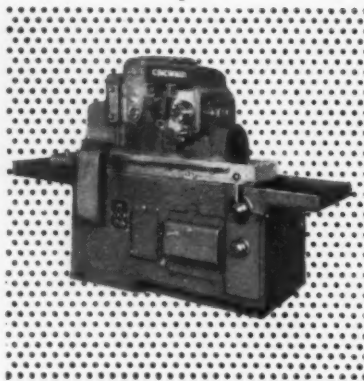


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NO. 2-24  
AUTOMATIC

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"What does the customer want?" These words have always guided Cincinnati Milling's machine design policy, from the first knee-type built 69 years ago to the latest bed type... the No. 2-24 Automatics. These new machines combine advanced production features with more convenient means of setting up the job. They are built in three styles: Plain, Duplex, and Plain Rise and Fall. All have...

**Automatic Two-Way Table Feed Cycles** for one-way milling; for reciprocal milling with midway safety stop position. Controlled through...

**Cycle Selectors**, a small cam shaft unit which can be removed and replaced in less than a minute. Units have been designed for almost every conceivable automatic cycle. In addition to table and spindle carrier, cycle selectors initiate other automatic functions including...

**Automatic Backlash Eliminator**—It automatically engages during feed stroke; automatically releases during rapid traverse. Another feature of value in modern metalworking practice is...

**Automatic Spindle Stop**—When the table stops for loading and unloading the fixture, the spindle stops rotating. To the production advantages gained through these automatic features, add...

**Single Control Lever**—Starts the complete automatic cycle, and controls...

**Power Manual Traverse** of table and spindle carrier; a labor-aiding convenience for setting up the machine. To top it off...

**Dynapoise Overarm**, a built-in feature that chokes self-excited chatter, smoothing out the cutting action.

With new CINCINNATI No. 2-24 Automatics, metalworking shops everywhere can reduce the cost of milling operations, within 3 hp and 5 hp range, on a wide variety of parts manufactured in medium to infinite quantities. For brief data, look in Sweet's Machine Tool Catalog, or if you want complete information, write for new 28-page catalog, No. M-1760.

**THE CINCINNATI MILLING MACHINE CO.**  
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## This Week in Washington

### Ike's Economist Asks Auto Output Cut

**Says booming auto production may be getting out of hand . . . Would cut working hours, not employment . . . Administration winning on EPT . . . Renegotiation change—By G. H. Baker.**

Booming passenger automobile production may be getting out of hand, President Eisenhower's top business adviser believes.

Solution, according to Dr. Arthur F. Burns, the White House adviser on economic matters, is to trim the number of employee working hours throughout the industry.

"A little slowing down in automobile production," says Dr. Burns, "would in my judgment be a good thing at the present time."

**Just Trim Overtime . . .** Unemployment in the automobile industry would not result from any cutbacks put into effect, since only the number of working hours—not the number of workers—would be trimmed. But workers' pay envelopes would grow slimmer, under the Burns recommendations.

Auto management as well as Walter Reuther's United Auto Workers (CIO) will undoubtedly have something to say on this score. Mr. Reuther has already complained of over-production. The industry, in rebuttal, expressed confidence in a strong market.

Dealer inventories (average: 13 cars) of new automobiles are nothing to be concerned about, Dr. Burns says. He notes that manufacturers have been shading the prices of new cars for several months, and that prices of used cars have been slipping for the past 5 or 6 months. But dealer stocks of new cars are not abnormal, nor are used-car inventories, although the latter are much higher.

**Absorb Steel Hikes . . .** Higher costs of steel are going to continue to be absorbed by automakers, Dr. Burns predicts. The consumer is not to be hit with any pass-throughs of higher material costs, at least not in the foreseeable future.



RETIRING as chairman of Joint Chiefs of Staff in August, Gen. Omar Bradley will take over the chairmanship of the Bulova Research & Development Laboratories.

Says Dr. Burns:

"Automobile manufacturers are now engaged in what some people have described as an intense competitive struggle for their so-called proper share of the market. In an environment like that, I should not expect the rise in the price of steel to be reflected in higher prices of automobiles."

Recent increases in the price of steel are to be absorbed by manufacturers in general, Dr. Burns believes. He thinks most industries—particularly automobiles and construction—will "put up with" the increases in their costs and will not raise their own prices.

**Ike Winning on EPT . . .** Extension of the hotly-contested excess profits tax until Jan. 1, 1954, now

appears to be headed for complete congressional endorsement.

Last week's decisive vote by the House to extend the profits levy for 6 months is a good indication of the strong bipartisan support that both the Senate and the House are prepared to give President Eisenhower when a key issue is at stake.

The new tax bill, when signed into law, will be retroactive to July 1, 1953—the day the old profits tax expired.

**"Oppressive Taxes" . . .** House approval of the extension bill was won only over the stubborn opposition of Chairman Daniel A. Reed, R., N. Y., of the Ways and Means Committee. He warned that extension of the profits law and failure to cut personal income taxes later this year might well lead to a recession. The \$9.4 billion deficit on the Treasury books as of June 30 is "a clear warning that our high tax policy has reached the point of diminishing returns," he said.

"Courage is lacking," Mr. Reed told the House, "and timidity and indecision are evidenced in a policy that maintains oppressive taxes because of continued deficits."

"This is a short-sighted policy that may well lead to a recession."

**Extend Renegotiation . . .** Chairman Daniel A. Reed, R., N. Y., of the House Ways and Means Committee last week introduced legislation to extend the present renegotiation law through calendar year 1954. The statute will expire at the end of this year, unless decided otherwise by Congress.

Three provisions for defense contractors and subcontractors are included in Mr. Reed's bill (H.R. 6104). These provide that:

1. Contracts performed abroad or contracts performed by foreign nationals are exempt from renegotiation.
2. Statute of limitations does not apply in cases of false filing.
3. Firms holding subcontracts from colleges and other exempt institutions that hold prime contracts are no longer exempt.





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## CONTROLS: BSA to Handle What's Left

**Aug. 1 will start administering fragments of controls . . .  
BSA will also be go-between for business, government . . .  
Must provide base for emergency controls if needed.**

Business Service Administration now expects to shift into high gear by Aug. 1, ready to administer the fragments of federal materials controls and become a go-between for business and government.

Remaining regulations under the Defense Materials System are few, chopped down and watered. They are: DMS Regs 1 and 2; NPA Regs 2, 3, 5, 6, and 7; and orders M-1A, M-11A, M-17, M-41, M-43A, M-80, and M-103.

Actually, carry-over of NPA-CMP work is largely a matter of seeing to it that there are sufficient set-asides to meet military and defense materials priorities.

As now planned, BSA's basic job is primarily to provide and coordinate facts and information for use of both government and business. This information must be in shape to provide a base for emergency control if mobilization were ordered. Standby controls are not at hand.

### How Much Consumed

This idea is supported by Office of Defense Mobilization which remembers that it took about a year to get CMP rolling after shooting started in Korea.

A huge volume of information, added to that collected by NPA, will be sifted to find out how much steel, copper, aluminum and possibly a few other items are consumed by major industries.

These would include automobiles, refrigerators, stoves, and even houses, but not individual end items such as bearings, nuts and bolts, fractional motors, valves and similar goods.

This would provide a working knowledge at any given time as to how much metal could be made available for "guns" and how much for "butter" as well as shortage capacities.

On M-day, the government could

exercise control of production by restricting output of end items through tightening up on the flow of metal to major civilian goods industries and stepping up the amount going to defense industries.

Allotments would be made only to manufacturers of end-items, dodging the need of doling out materials to everybody along the line. Makers of line items could buy the metal they needed but would be subject to military priorities.

## Stockpile Tools:

### Congress passes bill allowing machine tool stockpile

Spending of \$500 million this fiscal year to stockpile machine tools and to buy war plants is closer to realization with House and Senate passage last week of S. 1995, designed to continue certain types of authority held by the military departments.

In essence, the bill legalizes expenditures already outlined in the Defense Dept. appropriation bill, which has had House approval. Of

the \$500 million concerned, \$400 million would be spent for tool stockpiling.

S. 1995 would assign to the service secretaries extended authority to provide for "acquisition, construction, establishment, expansion, rehabilitation, conversion, and installation . . . of such industrial-type plants, buildings, facilities, equipment, machine tools, utilities, and appurtenances" as are believed necessary for national security.

This authority would last for the present emergency plus 6 months, or until July 1, 1954, "or until such date as may be specified by a concurrent resolution of the Congress whichever is the earliest."

## ICC to Decide on Freight Rates

Interstate Commerce Commission has tackled the knotty question of whether to permit present rail freight rates to continue at present levels or let them revert to April, 1952, schedules as of next February.

Railway officials last week presented final arguments on why the 13.8 pct increase granted temporarily in 1952 should be made permanent.

A return to former rates, say the railroads, would cut the rate of return to 1.64 pct and cut capital improvements.

## Nominated for Labor, ICC Posts

President Eisenhower has sent to the Senate nominations for 2 Assistant Secretaries of Labor and 1 member of the Interstate Commerce Commission.

Spencer Miller, Jr., a New Jersey state highway commissioner, and Harrison C. Hobart, vice-president, brotherhood of Locomotive Engineers, have been nominated as assistant Secretaries of Labor.

Howard G. Freas, California Public Utilities Commission official, has been suggested as the ICC member.

It is reported that Mr. Eisenhower plans to fill the third Labor Dept. opening with M. M. Olander, a former official of Owens-Illinois Glass Co.



"The heck with 'cops and robbers,' let's play 'board of directors'—that's lots noisier."

## West Coast Report

### Aluminum Corrugators Push for Sales

**Reynolds making first shipment of wide corrugated aluminum sheets to West . . . Threatens independent fabricators . . . Many discount move . . . But surplus feared—By T. M. Rohan.**

Independent western aluminum corrugators and a producer were scrambling for waning markets in the West last week.

Reynolds Metals this month is making its first shipment of new 48-in.-wide corrugated aluminum sheets from its McCook, Ill., plant to Drake Steel Co., a Fresno, Calif., warehouse firm. A few shipments have been made to the East from the new \$90,000 corrugating machine and have been well received.

**Size Limited . . .** Corrugated aluminum is widely used for California construction. Shipments of corrugated stock have been limited to 12-ft lengths and 14-in. widths to facilitate handling by jobbers. For the majority of buildings, this would involve laying on two vertical sheets end to end with some overlap to get the necessary height.

This has given rise to nine or more independent corrugating firms. And some warehouses buy coiled aluminum and corrugate it in the proper lengths to eliminate overlaps. The new twice-as-wide sheet about doubles the lateral coverage with equivalent labor while still permitting jobber handling of higher priced flat stock.

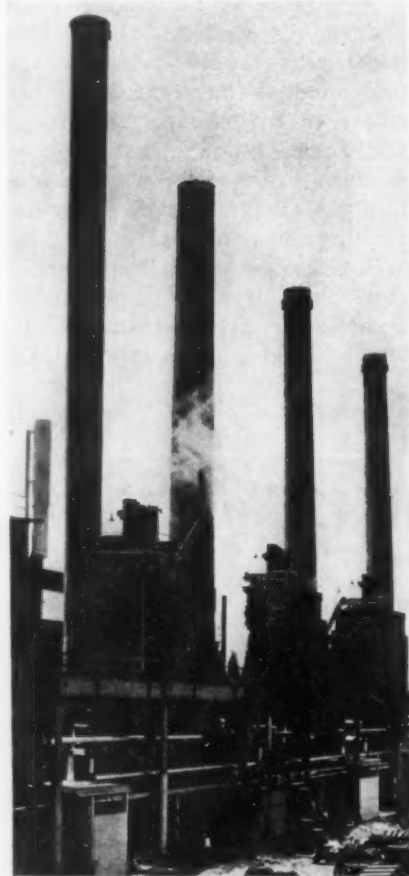
**Has High Hopes . . .** Reynolds claims about 7 pct less metal will be used compared to the 24-in. sheet with the recommended 2-corrugation overlap.

Corrugators tend to discount the new move. Present corrugation machines are limited to 27-in. stock, but one fabricating firm, Abco Mfg. Co. of Fresno, is planning to build a 48-in. mobile corrugator. This would be mounted on a truck for on-the-job corru-

gation from coil stock of wide sheets of proper length.

Reynolds, however, believes the new wide corrugated sheets will capture up to 70 pct of the sheet aluminum market for California construction, especially on farms. Drake's first shipment is already sold out before arrival. And orders for the new wide corrugated sheets already account for 50 pct of Drake's new sheet aluminum orders.

**Surplus Coming . . .** Corrugators and producers alike hope the new



SMOKELESS STACKS mark openhearth shop at Torrance Works of U. S. Steel's Columbia-Geneva Div. after installation of Cottrell precipitators.

sheets will help stabilize the fluctuating corrugated market. Current sales are very slow due to widespread California construction strikes and production cutbacks.

Supply is also pulling away from demand. One California aluminum salesman last week said, "We'll have aluminum running out our ears in two months."

**More Pig Imports . . .** While western pig iron producers reach out for markets, another load of imports landed in California last week of about 2200 tons; 1000 went to Los Angeles, 500 to Oakland and 700 to the Pacific Northwest. Selling price was at least \$5 under the going market. The shipment averaged 3.85 to 4 pct carbon, ideal for foundry use.

**Fabrication Cuts . . .** Price cutting on fabrication in California continues to grow (THE IRON AGE, Mar. 26, p. 97). Fabrication jobs in the central valley are down to \$1 per sq ft of floor space from a recent normal of \$1.50 to \$1.75.

Galvanized is again loosening because sheet metal firms are buying in cycles in hopes of getting in direct mill customer classifications. Flat galvanized is plentiful to 26 gage but starting at 28 gage is tighter because it is used for hot-rolled sheets.

Warehouse steel stocks are generally ample except for the traditional heavy structural, plate and sheet shortage. The latter is also due in some measure to Kaiser shutting down its sheet mill for about a month to add two new stands. Other mills have also had some second quarter overrun.

**Hot Business . . .** While California's central valley bakes in the summer sun, one manufacturer there is making hay.

Vendorlator Co. of Fresno, which claims it is the largest U. S. manufacturer of coil operated bottle vending machines, is doing 10 pct more business than in '52.



# Machine Tool High Spots

## Vance Plan Given Better Chance

**Statement of mobilization policy calls for a build-up of productive capacity . . . Seems to assure adoption of some version of the Vance Plan—By E. C. Beaudet.**

Developments in Washington last week gave assurance that some version of the Vance Plan for military preparedness will be adopted by the government. Defense Mobilizer Arthur Flemming in his policy statement on mobilization readiness reconfirmed the Administration's belief in the need to build up productive capacity rather than stockpile military end items.

In recent months speculation had arisen as to whether the plan would be used because of rumors of Defense Dept. opposition. However, these reports seem to have been more the result of disagreements on details of carrying out the program rather than the philosophy behind it.

**Shift Rapidly . . .** Support for the Vance plan was given by Mr. Flemming last week when he said that the government's mobilization program should call for sufficient capacity to meet both war and civilian needs and should be able to shift rapidly to all-out war production.

He also stated that studies now being made to determine where additional productive capacity is needed indicate that "expansion will be presumably concentrated on providing long-lead time . . . and critical types of tools, equipment, instruments, materials, energy and technically trained personnel."

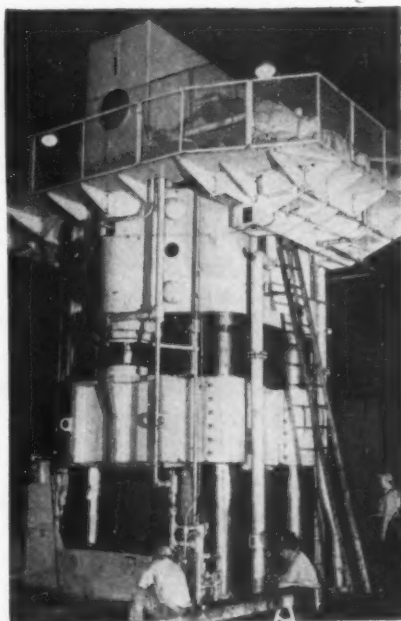
**Wanted \$500 Million . . .** To what extent the recommendations of the Vance Committee will be absorbed under this overall supporting policy view is difficult to determine until definite legislative steps are taken. The Vance plan originally called for annual expenditures of up to \$500 million over the next several years and estimated re-

placement costs at \$300 million per year.

The former administration had asked for \$500 million to get the program underway this year, but in view of the budget-cutting atmosphere in Washington some sources estimate the final grant from Congress will be around \$200 million to \$225 million.

**Extend Stockpiling . . .** In other Washington news last week both the Senate and House passed a bill to extend the Defense Dept.'s authority to stockpile machine tools and to expand production capacity of critically needed defense facilities for the present emergency plus 6 months.

This action had been strongly recommended by John C. Houston, Jr., acting chief of the Munitions Board just before the agency expired last week.



THIS 7000-TON Hi-draw press being installed at Consolidated Vultee Aircraft's Fort Worth, Texas, plant is one of the largest hydraulic presses in the Southwest.

**Hold Tool Show . . .** The 3rd European Machine Tool Exhibition, organized by the European Committee for Cooperation of Machine Tool Industries will be held in Brussels, Belgium, Sept. 13 and 14. Twenty-one American manufacturers will exhibit their products at the show.

In addition to machine tools and portable tools, the exhibit will include measuring, controlling and testing instruments, welding equipment, diecasting machines, heat-treating equipment and other auxiliary products.

**Install Large Press . . .** A new 7000-ton Hi-draw press, one of the largest of its type ever built, was installed recently at Consolidated Vultee Aircraft's Fort Worth, Tex., plant. Costing nearly \$500,000, the press built by Hydraulic Press Mfg. Co., required eight freight cars to ship it to the plant.

The press weighs about 1 million lb and is driven by two motors developing a total of 400 hp. It stands 42 ft high, 24 ft wide and rests on a 1 million lb reinforced concrete footing 19 ft below the floor level.

**Makes Larger Parts . . .** Now in the final stages of tooling and testing the press is expected to produce larger aircraft parts than were formerly possible on Hi-draw metal forming machines. The Hi-draw principle utilizes pressures up to 11,000 psi to form parts of uniform strength and thickness.

Nearly 6 weeks were required to make the installation. Heavy trucks, cranes, pulleys and cables were used to ease the huge sections into place. The press bed itself weighs 113 tons, the bolster plate 26 tons, the main ram 29 tons and the head 90 tons. If ordered today its price would be about \$695,000 as compared with the original of \$430,000. Ability to form larger, one piece parts rather than built up sections makes for sounder aircraft construction and economy.

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## Free Publications

Continued

### Materials handling

Work-O-Matic units are said to provide a practical, inexpensive method of assuring automatic feeding of parts at work level, control of supply of material at use points, easy shift-over in operations, space-saving storage, and positive, spot-control, mechanical dumping. Described in a new bulletin are: the Work-O-Matic bin box system, gravity fed hoppers, multi-duty boxes and trays and end-loading scoops. *Union Metal Mfg. Co.*

For free copy circle No. 13 on postcard, p. 101.

### Wire insulation

Roebbling Roetemp is a new type of magnet wire insulated with a specially processed tape said to have exceptionally high heat-resisting characteristics. The wire is recommended by the company for applications where high operating temperatures are encountered. Complete details are given in a new folder. *John A. Roebbling's Sons Co.*

For free copy circle No. 14 on postcard, p. 101.

### Truck batteries

C & D Batteries, Inc., has just made available its latest specification bulletin. Covered is the company's complete line of industrial truck batteries. *C & D Batteries, Inc.*

For free copy circle No. 15 on postcard, p. 101.

### Chain, sprockets

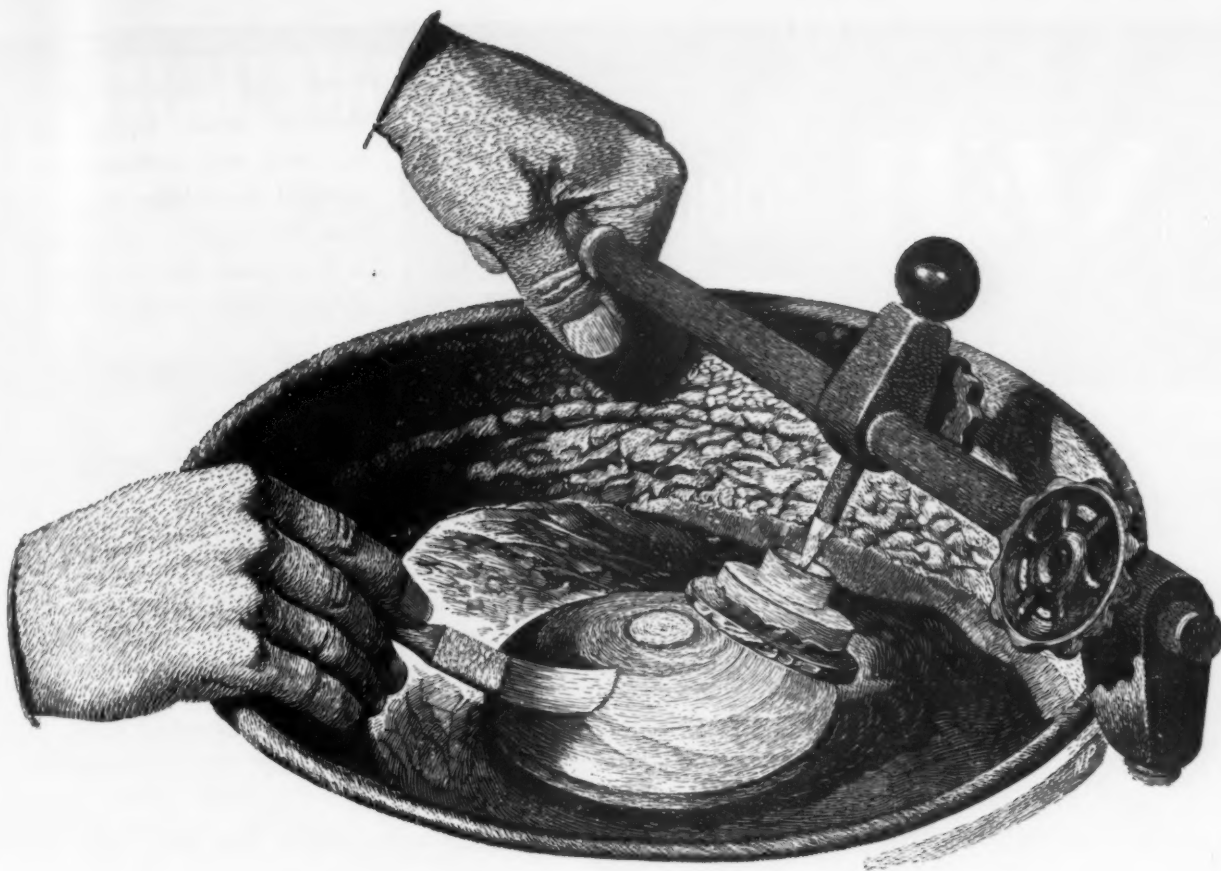
Powers' facilities for producing roller chain and sprockets are illustrated and described in a new bulletin. In addition there are photographs showing various chain applications. *Powers Mfg. Co.*

For free copy circle No. 16 on postcard, p. 101.

### Friction clutches

Morse Chain Co. has made available an illustrated engineering data sheet describing its line of torque-limiting, slip-type friction clutches. These units are said to provide overload protection for a variety of machine drives by functioning as an automatic shear pin mechanism. Tables of specifications are included. *Morse Chain Co.*

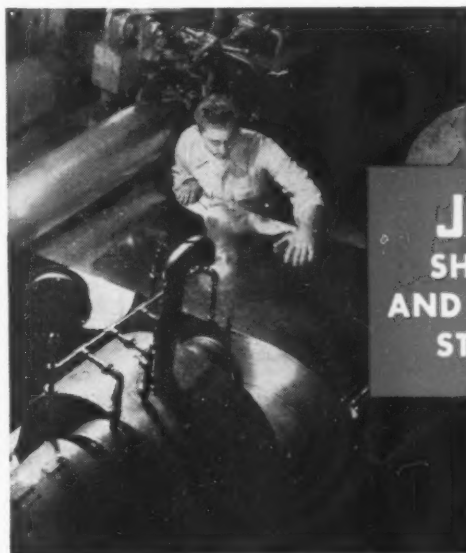
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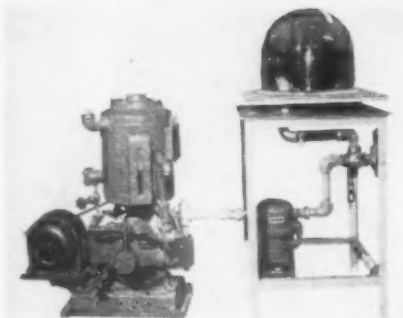
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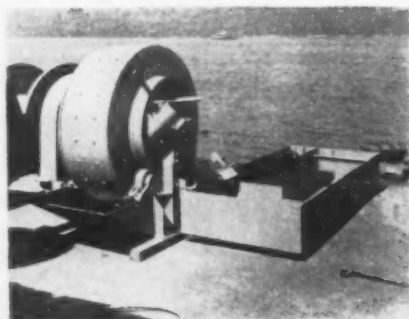


## Vacuum units for precision investment casting

Vacuum units for industrial precision investment casting are being made to order. Vacuum is needed to remove air from investment mix immediately after the material has been made into a slurry and is needed to remove air from molds after the slurry has been poured over the wax patterns. A Beach-

Russ type RP vacuum pump, motorized, Stay-New filter, three-way air valve, steel table with jiggle plate and rubber mat comprise the unit. Bell Jar, made of plexiglass, is separate. Multiple station units can be made for large volume production. *Alexander Saunders & Co.*

For more data circle No. 18 on postcard, p. 101.

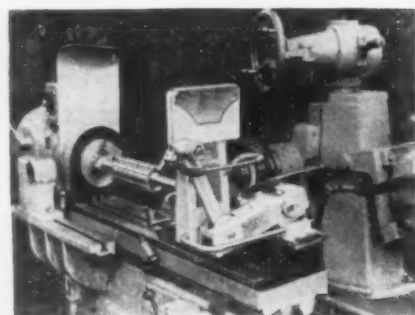


## Salvaging metal to compensate for melting losses

This metal reclaiming mill is a typical digester to extract metal from nonferrous skimmings, slags, cinders, etc. New design features incorporated in the mill facilitate adjustments and replacements, eliminate seepage of concentrates. Increased closed circuit capacity improves precipitation of tailings

for reducing washing time and clean remelting metal. Efficiency in milling and specific gravity separation, and removal of oxides and waste have been increased. A self-contained unit in 4 sizes is rated at 1 to 30 tons daily capacity. *Dreibach Engineering Corp.*

For more data circle No. 19 on postcard, p. 101.



## Truing wheels grind involute splines simply

P&W's Diaform wheel forming attachment when applied to spline grinding machines form trues grinding wheel contours accurately and insures re-truing of any given form to the same degree of accuracy as often as required. The attachment works on the pantograph principle, giving the user a

5:1 or 10:1 favorable ratio between template followed and the diamond that trues the grinding wheel. The template is made five or ten times over size and corresponds to the wheel shape—that is, opposite to the work to be ground. Procedure is comparatively simple. *Pratt & Whitney.*

For more data circle No. 20 on postcard, p. 101.



## Forkloader has 6000-lb lifting capacity

For heavy duty operation on rough terrain, mud, snow and sand a new Forkloader has 5 speeds forward and reverse, uses positive 4-wheel-drive and large, low-pressure high-flotation tires. Stability is inherent in special design which places the engine over the rear wheels, plus use of ballast counterweights at the

rear of the unit. A 100-in. wheel-base provides anti-roll stability. With a full load on the forks, the manufacturer states there is ample weight on the rear wheels to maintain traction at all times. *Baker-Lull Corp.*

For more data circle No. 21 on postcard, p. 101.

Turn Page



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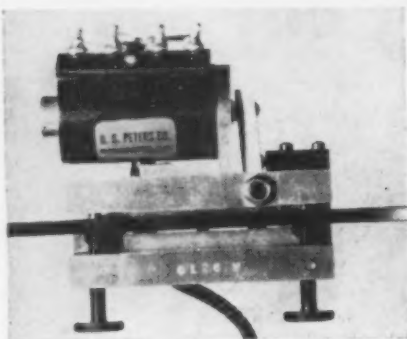
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## New Equipment

Continued

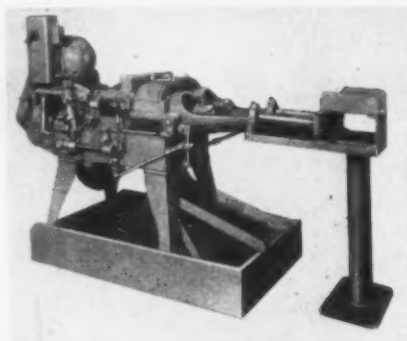


### Extensometer makes sheet metal tensile tests

Measuring and recording elastic deformation in tensile test specimens of sheet metal is possible with a new microformer type extensometer. It can be used on 1/2-in. wide specimens 0.005 to 0.25 in. thick. Gage length is 2 in. It is especially well adapted to use on hard stainless steel specimens. Magnifications of 250, 500 and

1000:1 are obtainable over a measuring range of 0.04 in. The instrument has hardened contact points on thumb screws held by mating Dural channels that roll over each other on two steel balls, changing the position of the core in the Microformer coil. *Baldwin-Lima-Hamilton Corp.*

For more data circle No. 22 on postcard, p. 101.

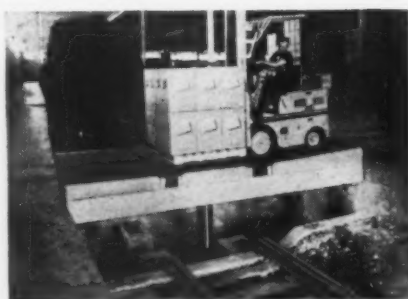


### Substantial increase in nut blank production

With the improved Budd-Ranney nut blank machine it is possible for manufacturers and users of nut blanks from 1/4 to 2-in. diam to increase production. Both bar stock and drills rotate simultaneously in opposite directions, speeding the machining operation. Revolving both stock and drill also makes for concentricity of the tap-drill hole

with the body of the nut. The machine utilizes two tools to perform the cutting-off operation. This saves stock, since narrower parting tools may be used. Twin spindles in models producing nut blanks up to 1 1/2 in. diam enable two bars to be machined simultaneously. *Miller Glass Engineering Co.*

For more data circle No. 23 on postcard, p. 101.



### Spur track bridge eliminates costly detours

When railroad spur tracks cut through the middle of property or plant, transfer of materials from one side of the tracks to the other can be simplified with an Oilraulic transfer bridge. Raised, the bridge provides a straight line shortcut across the tracks. It lowers to be-

come an integral part of the track system for train operation. Recessed-rail-type, rotating-type and drawbridge-type are adapted to different plant situations. The bridges are operated by a powerful Oilraulic jack. *Rotary Lift Co.*

For more data circle No. 24 on postcard, p. 101.



### Tool hones and gages atomic gun barrel

A 69-ft long tool is used to micro-hone the bore of the new 280 mm atomic gun. It has a gage in its nose, making it possible to check the diameter of the bore at any point throughout its full length, without removing the tool from the bore, or the barrel from the machine. The tool reduces by 80 pct

the time that the barrel is at the Microhoning machine. The 33-ft barrel can be checked within 0.0003 in. tolerance, in just a few minutes. Distance from muzzle end to point where the diameter is being checked is also indicated on dials. *Micro-matic Hone Corp.*

For more data circle No. 25 on postcard, p. 101.



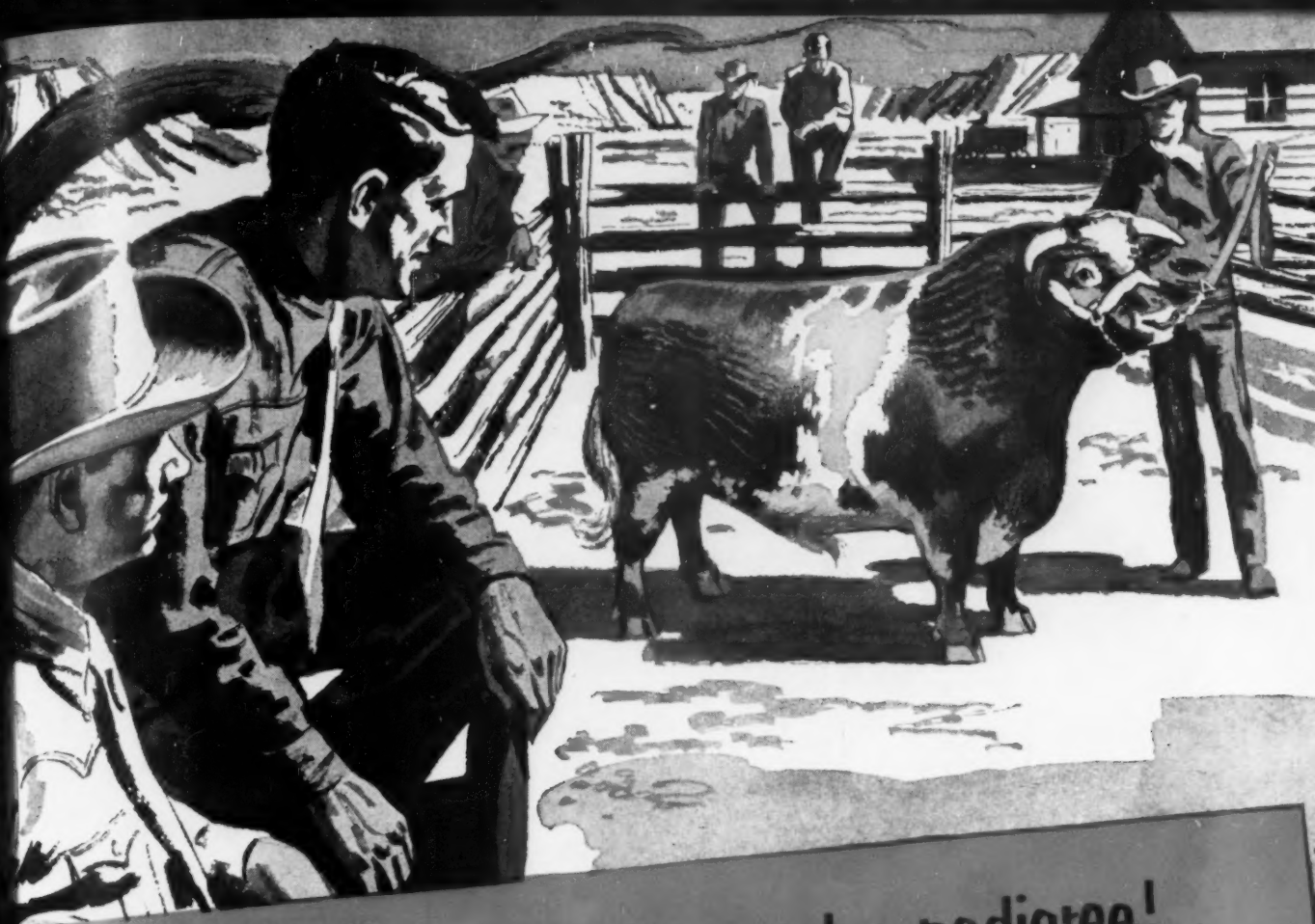
### Contour wheel dresser for cylindrical grinders

Automatic contour wheel dresser permanently mounts to the right of the foot stock on inclined table type plain cylindrical grinder. This dresser has been adapted to B&S No. 5 plain grinder and to Norton 6x30 plain grinder. Almost any desired contour that can be entered by a diamond can be dressed into the grinding wheel with this diamond

with accuracy of tenths. The diamond moves across the wheel in an uninterrupted movement, producing a perfect blend between the radii and tangents or any other complex form. An enlarged template controls the movements of the dresser and the diamonds. *Hoglund Engineering & Mfg. Co., Inc.*

For more data circle No. 26 on postcard, p. 101.

Turn Page



# SMART RANCHERS demand a pedigree!

**SMART HOB BUYERS DEMAND A CERTIFIED UNGROUND HOB!**

The TOOLGRAPH® Chart which accompanies every Illinois Tool Works CERTIFIED Unground Hob is an electrically produced "certificate" of accuracy that shows the exact alignment of each hob tooth in relation to the other teeth. It's a positive, visual inspection record, not subject to human error and it's a useful record, too, that helps assure efficient production.

Yes, the TOOLGRAPH Chart is actually a CERTIFIED Unground Hob's pedigree, proof of real value. It's typical of the many *plus* values that design ingenuity, metallurgy, production skill and experience add to every Illinois Tool Works cutting tool.

Smart hob buyers, like smart ranchers, demand a pedigree. That's why they specify Illinois Tool Works CERTIFIED Unground Hobs!

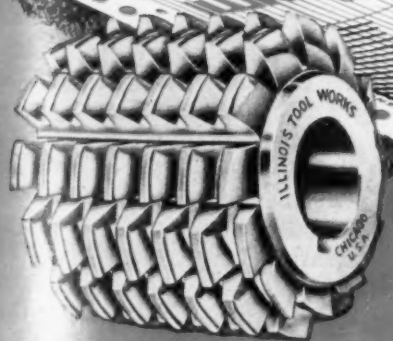
## ILLINOIS

### TOOL WORKS

2501 N. Keeler Ave. • Chicago 39, Illinois

In Canada:  
Canada Illinois Tools Ltd., Toronto, Ontario

\*T.M. Reg. U.S. Pat. Off.

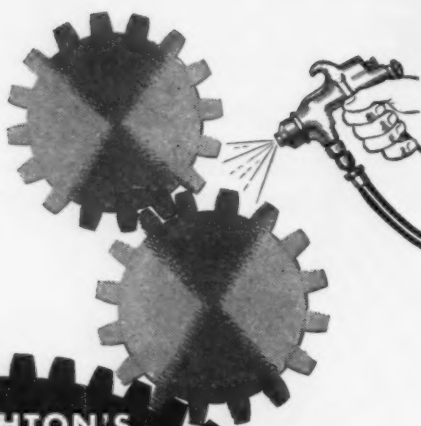


"Headquarters for Engineered  
Cutting Tools"





you'll get  
a new idea of  
lubrication economy  
when you  
use



You can put Houghton "Tenac" to work on the heaviest external lubricating jobs and benefit greatly from its long-lasting, cost-saving service.

"Tenac" is a black, tough lubricant which rapidly forms a plastic film. It is fortified with special additives that give it exceptional adhesiveness. It is available in 3 grades—light, medium and heavy—all of which give you these additional advantages:

- No preheating necessary.
- Easily applied by brush, spray, drip feed, or swab.
- Fast-setting film won't become brittle or flake off.
- Has high lubricity and oiliness.
- Water resistant—corrosion preventive.
- Remains fluid in storage.
- High penetration ability.
- No chlorinated or toxic dilutions.
- High flash point reduces evaporation and fire hazard.

AVAILABLE IN  
3 GRADES:

TENAC L (light)  
TENAC M (medium)  
TENAC H (heavy)

Try Tenac for heaviest duty. See your Houghton Man for full details and prices—or write to E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pa.

TENAC LUBRICANTS  
... products of



Ready to give you  
on-the-job service ...

## New Equipment

Continued

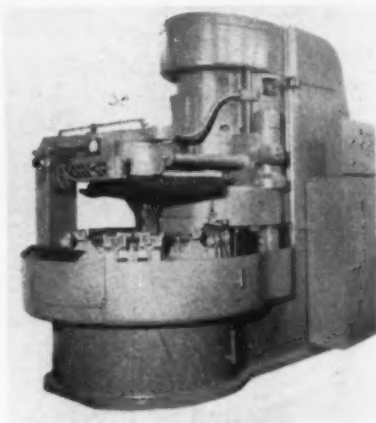
### Chemical steel polish

MirroFe, a room temperature chemical steel polish, produces a brilliant luster on most steel articles by simple chemical immersion. It also reduces surface roughness and deburrs sharp edges. A 1-min immersion is said to produce a luster equivalent to a 30-min deposit of bright nickel. Although MirroFe imparts a slight corrosion resistance to steel, added protection such as wax, lacquer, or a reduced amount of electroplate is recommended. MirroFe also has application in chemically polishing steel dies to give a fine micro finish which reduces die wear, increasing die life. *MacDermid, Inc.*

For more data circle No. 27 on postcard, p. 101.

### Vertical grinder

High production rates have been achieved by a farm equipment manufacturer in grinding replaceable plow shares through the use of a Besly No. 953-36 in. vertical grinder. A maximum of  $\frac{1}{4}$  in. of stock is removed from each share at a rate between 350 and 400 steel shares per hr by the grinder. Adapted for automatic operation,



the grinder is equipped with 5 automatic clamping fixtures which can accommodate 12, 14, 16 and 18-in. plow shares. The fixtures are mounted on a rotary table which automatically revolves beneath the abrasive disk of the grinder. A special mechanism compensates for abrasive wear. *Besly-Welles Corp.*

For more data circle No. 28 on postcard, p. 101.  
Turn to Page 112

it's new!

# Silblok 25 and Silblok 50

**...for maximum blocking  
efficiency**

Characterized by freedom from impurities, uniform analysis and high density, Silblok 25 and Silblok 50 offer you maximum effectiveness in blocking open hearth and electric furnace heats.

They assure closer control of carbon content, help keep foreign inclusions to a minimum and start blocking action in the shortest possible time.

Silblok 25 and Silblok 50 contain nominal silicon

contents of 25% and 50%, adjusted to give optimum results. Both alloys are carried in stock and supplied in sizes to meet customers' requirements.

Silblok 25 and 50 are among the complete family of Vancoram special and regular silicon alloys for use in the steel, iron, chemical and non-ferrous industries.

For complete information, contact your nearest Vanadium Corporation office.

*Other Vancoram alloys for the iron and steel industries include a complete range of vanadium, titanium and chromium alloys, as well as a variety of special foundry alloys.*

## VANADIUM CORPORATION OF AMERICA

Producers of alloys,



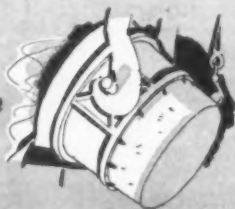
metals and chemicals

420 Lexington Avenue, New York 17, N. Y. CHICAGO • DETROIT • CLEVELAND • PITTSBURGH

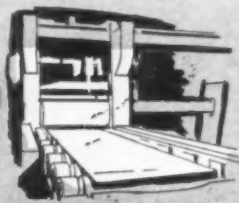
SILBLOK in the furnace



CONTROL in the ladle

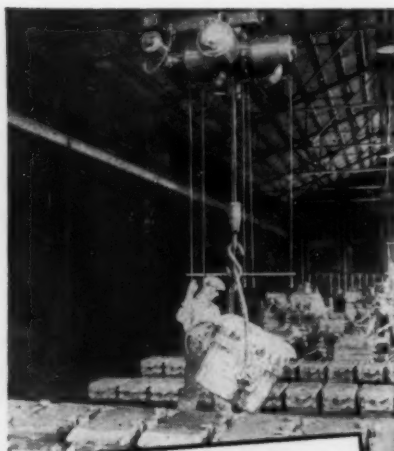


QUALITY in the steel

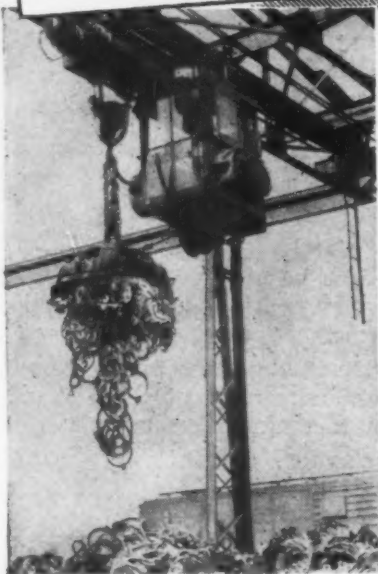


## SHEPARD NILES Floor-Operated Hoist

Operator mainly occupied with other duties. Hoist used for fast, efficient handling of relatively short hauls.



## WHICH HOIST is RIGHT FOR YOUR JOB?



## SHEPARD NILES Cab-Operated Hoist

Operator in cab moves loads along at high speeds—occupies best vantage point for spotting or stacking materials.

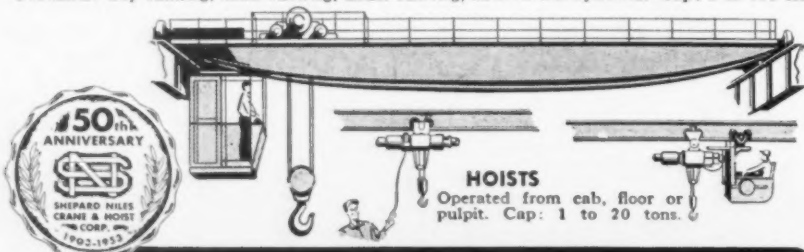


Choosing the hoist  
that's right for your job  
calls for expert advice.

Let the Shepard Niles representative in your area guide you in your choice. He specializes in through-the-air handling—can help you select the hoist that best fits your job. Write Shepard Niles today for latest bulletins describing both types of hoists—and ask to have a representative stop by your office.

### CRANES

Overhead: Top running, inner running, under running, floor or cab operated. Cap: 1 to 450 tons.



# SHEPARD NILES

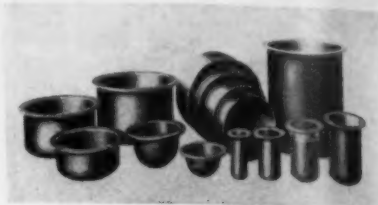
CRANE AND HOIST CORPORATION

1424 SCHUYLER AVENUE, MONTAUR FALLS, N.Y.

## —New Equipment— Continued

### Metallized steel pots

Metallized pressed steel pots for heat treating furnaces are reported to give up to 200 pct longer life than ordinary pressed steel contain-

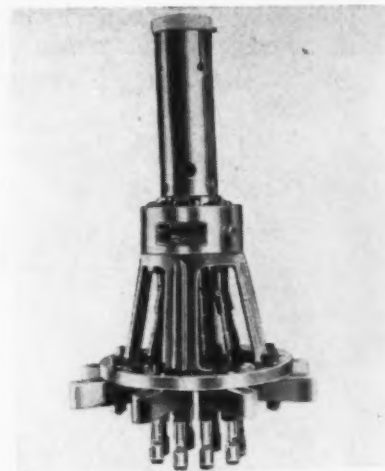


ers. Three different types of metallized coatings are for temperatures up to 1500°F, from 1500° to 1700°F, and for 1700°F and over. The resistant coatings protect pressed steel surfaces against heat oxidation and scaling. *Eclipse Fuel Engineering Co.*

For more data circle No. 29 on postcard, p. 101.

### Auto reverse tapper

These universal joint adjustable tapping heads with the reverse built right in are designed to tap two, three or four holes in any pattern from 11/16-in. centers to within 5 1/4 in. diam circle for tapping



0 to 1/4 in. The head is of rugged construction with aluminum castings. Gears, spindles and shafts are one piece, hardened and ground. Ball thrust bearings at all thrust points and oilite radial bearings. *Errington Mechanical Laboratory, Inc.*

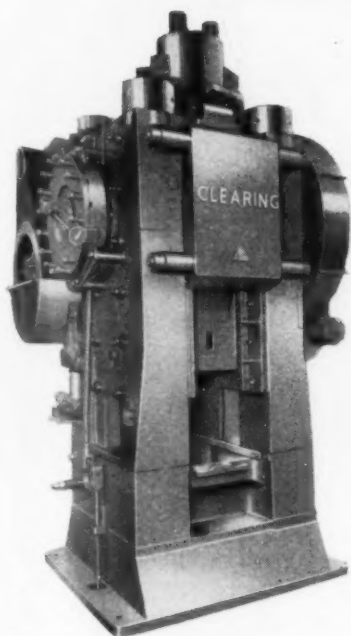
For more data circle No. 30 on postcard, p. 101.

Turn to Page 114





## Are Tomatoes Safe to Eat?



Vitamin-conscious contemporaries may smile at the question, but a few generations ago people refused to eat tomatoes because they were believed to be poison. Our ancestors denied themselves the health-giving qualities of this now popular vegetable because they clung to a mistaken idea.

This is no more peculiar, however, than a modern manufacturer who clings to old concepts of production. Failing to utilize press

economies just because the part in question has always been cast or cut from solid is denying a business the healthful benefit of lower costs.

Why not re-examine your productive processes—now? If you're making large numbers of identical items out of metal, it's almost certain that modern press methods can cut your costs. Ask us to help you survey the possibilities. It costs you nothing to consult us. Call on Clearing Machine Corporation today.

### CLEARING MACHINE CORPORATION

6499 WEST 65TH STREET • CHICAGO 38, ILLINOIS

HAMILTON DIVISION, HAMILTON, OHIO

# CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION



July 16, 1953

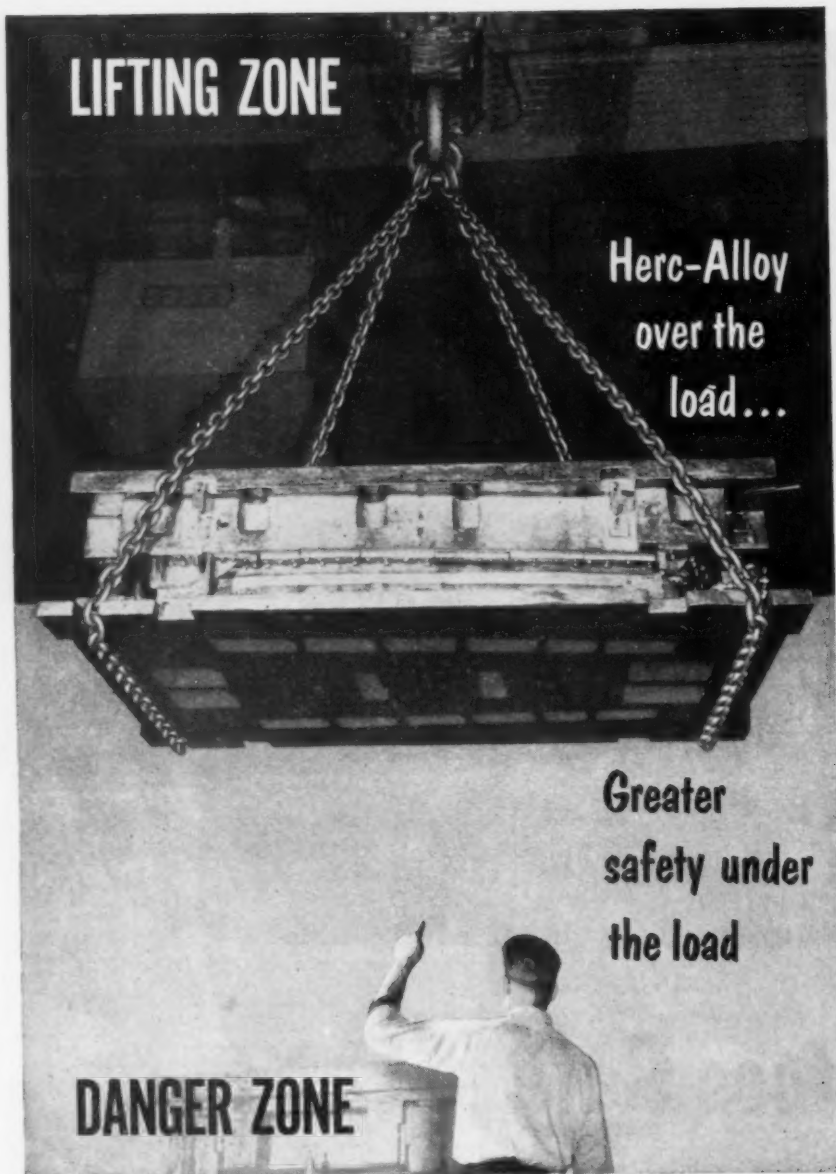


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## SPECIFY **HERC-ALLOY** SLING CHAINS



Write  
for Data  
Book

**HERC-ALLOY**

...is the  
original alloy  
steel chain

Herc-Alloy Sling Chains bring you many advantages. First and foremost...they offer maximum protection to men and materials. Secondly, their special alloy steel, processed by men with unmatched heat treatment know-how, gives long life and economy. Third, they weigh less (without any sacrifice in tensile strength) and are far easier for workmen to handle. That's why so many well-known plants are switching to Herc-Alloy Sling Chains.

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### COLUMBUS MCKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corp.)

General Offices and Factories: TONAWANDA, N. Y. • District Offices: New York, Chicago, Cleveland

Other Factories at Angola, N. Y.; Dixon, Illinois; St. Catharines, Ontario, Canada  
and Johannesburg, South Africa

## New Equipment

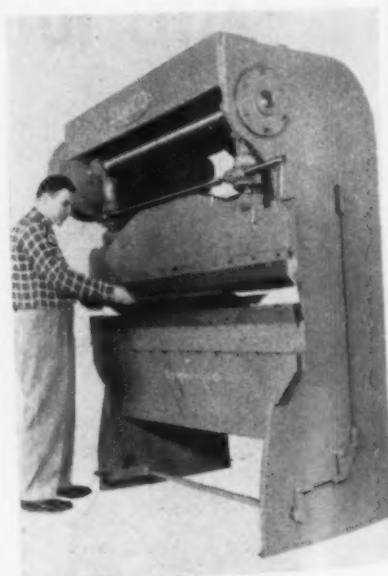
Continued

### Tiny parts cabinets

All steel tiny parts cabinets consist of two 1½ in. high drawers in a rugged one piece welded frame, having overall size of 3¼ in. high x 11 in. deep x 11 in. wide. Each drawer is furnished with 8 dividers, giving the cabinet 24 adjustable compartments. Extra dividers make possible a total of 56 compartments per unit. Units may be stacked in one solid, rugged assembly. *Precision Equipment Co.* For more data circle No. 31 on postcard, p. 101.

### Press brake

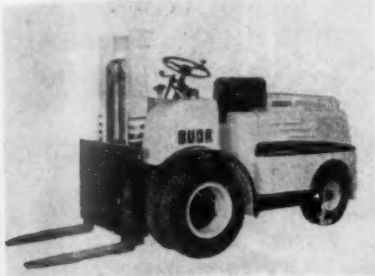
Maximum performance, minimum maintenance, and ease of operation for utmost accuracy of parts are claimed for new sheet metal forming power press brakes. Construction is sturdy with friction factor of operation largely eliminated. Accurate ram and welded steel frame are both normalized. Movable parts have ball or roller bearings throughout with the exception of alloy bronze bearings on alloy steel forged and balanced eccentric crankshaft. Other advantages include adjustable variable speed



drive and 1½ hp motor; foot tread adjustable to any position of bed with uniform action at any point. Ram and bed plates are 72 and 96 in. long respectively for the two models. *Service Machine Co., Inc.* For more data circle No. 32 on postcard, p. 101.

### Fork lift trucks

Two new 6000-lb capacity, pneumatic tired fork lift trucks are available with dual or single drive wheels, have 6000-lb load capacity at a 24-in. load center. Standard lift heights of 72, 84, 108, 114 and 120 ft are available. Model FTP60-24 is powered by a heavy-duty Buda



6B-230 gasoline engine. A precision-built Buda diesel powers the FTPD60-24. Trucks feature a single lever, automotive type, full range gear shift; center-point steering; full front vision instrument panel; a 12-in. diam industrial type, quick-change clutch; hydraulic brakes. Torque converters are optional equipment. *Buda Co.*

For more data circle No. 33 on postcard, p. 101.

### Roller slide racks

The addition of roller bearing slides to Stackracks allows the heaviest boxes or bins to slide as easily as drawers in a file. The new slide racks lock together, without tools, to form storage units of any size, shape or capacity. Tote boxes or Stackbins can be stored in Stackracks like drawers, keeping small parts and materials always accessible. *Stackbin Corp.*

For more data circle No. 34 on postcard, p. 101.

### Welding electrode

New welding electrode is designed for build-up work and hard-surfacing application wherein the deposited metal can be machined or flame hardened. GE Type W-98 electrode is a heavy-covered flame-hardening rod that can be used in all positions. The arc is steady spray type, similar to that produced by E-6013. *General Electric Co.*

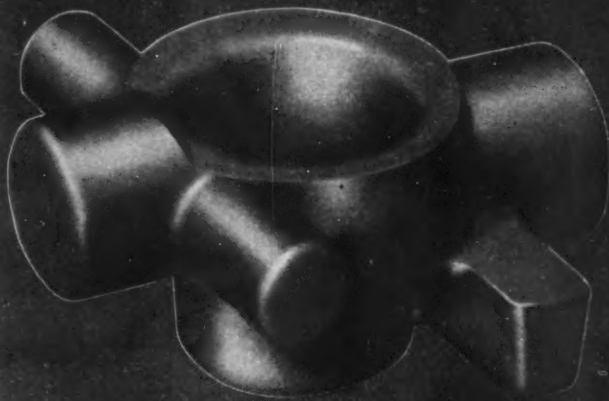
For more data circle No. 35 on postcard, p. 101.

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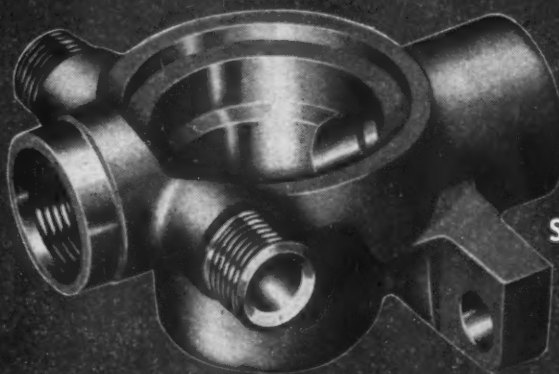
## MUELLER BRASS CO.

# forgings

## BRASS • BRONZE AND ALUMINUM



FORGED TO  
PERFECTION



PRECISION  
MACHINED  
TO YOUR  
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IT'S YOURS! NEW 32-PAGE  
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forgings

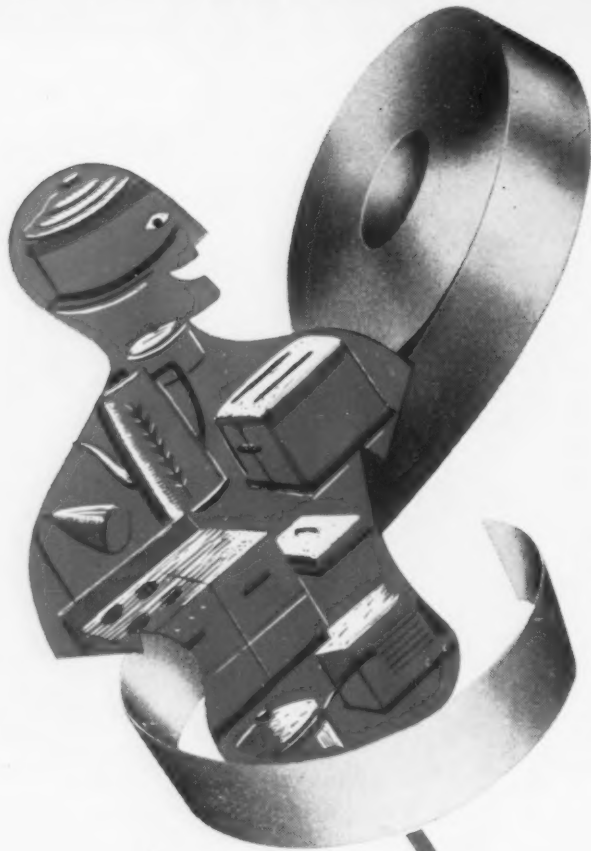
- brass
- bronze
- aluminum

## MUELLER BRASS CO.

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# COLD ROLLED STRIP



## TAILOR-MADE FOR YOU BY FOLLANSBEE

Follansbee is a flexible, compact organization of steel *specialists*. That's why it is one of the companies best able to offer special, personalized attention to the needs of Cold Rolled Strip buyers.

Follansbee Cold Rolled Strip is rolled and tempered to your specifications—a custom-made quality strip that fulfills most manufacturing needs.

Follansbee Custom Quality and Custom Service means *real* production efficiency and time-saving economy in your forming operations.

Assure yourself a continuous supply of uniform strip from coils, delivered directly from the Follansbee mills to your automatics. A trained Follansbee Steel representative is as near as your telephone. Call him today. He'll gladly discuss your strip steel fabricating requirements with you.

### FOLLANSBEE STEEL CORPORATION



GENERAL OFFICES, PITTSBURGH 30, PA.

COLD ROLLED STRIP SEAMLESS TERNE ROLL ROOFING  
POLISHED BLUE SHEETS AND COILS

Sales Offices—Chicago, Cleveland, Detroit, Indianapolis, Kansas City, Los Angeles, Milwaukee, Nashville, New York, Philadelphia, Rochester, San Francisco, Seattle; Toronto and Montreal, Canada.  
Mills—Follansbee, W. Va.

FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa. Rochester, N.Y. Fairfield, Conn.

### —New Equipment—

Continued

#### DC rectifier welder

In ratings of 200, 300 and 400 amp, a new dc rectifier welder is a heavy duty unit built for day in and day out service in production welding. Its design incorporates fan-forced, up-draft ventilation which provides cool operating temperatures and assures long rectifier life. *Metal & Thermit Corp.*

For more data circle No. 36 on postcard, p. 101.

#### Metal belt conveyor

Armorbelt conveyors can carry loads ranging from a few ounces up to 16 tons and will resist wear, heat, cold, high impact, oils, etc. Power requirements are kept to a minimum by having the entire belt run on protected ball bearings. The



individual metal link construction eliminates belt tracking problems. Horizontal conveyors are furnished for standard and heavy duty applications in widths from 6 to 120 in. and lengths up to 200 ft. Inclined and vertical models for floor to floor conveying take 1000-lb bags, boxes, drums at speeds up to 20 packages per min. *M-H Standard Co.*

For more data circle No. 37 on postcard, p. 101.

#### Electric counter

Useful for industrial counting an electric double counter offers an upper set of figures recording counts to 999 and a lower set recording counts up to 99,999. Total registered by the upper set may be returned to zero at any time, for example, at the end of a shift or run or on completion of a count, while the lower set continues to record a grand total. A bell rings at each count. Operated by solenoid it can be actuated easily by foot treadle, pushbutton or electric eye. *Rockwell Mfg. Co.*

For more data circle No. 38 on postcard, p. 101.

## Control and dispenser

A new approach to automatic control and dispensing of spray booth and metal cleaning compounds is found in an electronic control. It continuously measures the concentration of compound in the water and automatically adds the exact amount needed when the concentration drops. The instrument eliminates the trial-and-error method of compounding. **DuBois Co., Inc.**

For more data circle No. 39 on postcard, p. 101.

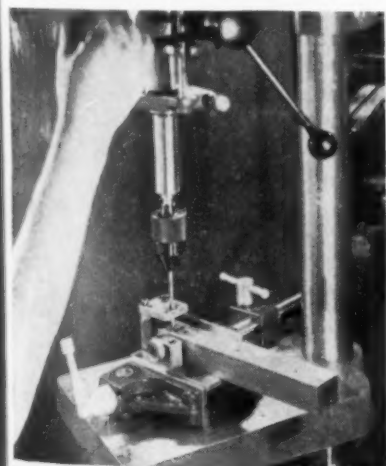
## Zinc oval pail

A 12-qt oval pail is made of sturdy steel with alloyed zinc coating for extra resistance to rust and corrosion. Narrower width allows it to fit more snugly on step-ladder extension platforms, and in many places where space limitation presents a problem. It provides effortless handling of wide-based sponge mops. Its shape forms a natural pouring lip. **Wheeling Corrugating Co.**

For more data circle No. 40 on postcard, p. 101.

## Instant change vise

Lightning-fast ratchet jaw enabling work to be tightly locked or completely released by a mere flick of the hinged handle operating the screw jaw is a feature of the new instant change Float-lock safety



vise. The model has three bosses for easy jig attachment, turns over on three sides for maximum drilling flexibility, and swings completely out of the way when not in use. **American Machine & Foundry Co.**

For more data circle No. 41 on postcard, p. 101.

# ROLOCK

## FABRICATED ALLOYS

HEAT AND CORROSION RESISTANT



LEFT: Parts entering roller hearth furnace on "Serpentine" trays.  
BELOW: "Serpentine" trays on loading table.



## "SERPENTINE" DESIGN

*minimizes* **WARPAGE...**

**LOWERS HOUR-COSTS FOR FURNACE TRAYS AT PRATT & WHITNEY AIRCRAFT**

Rolock "Serpentine" furnace trays are carrying jet engine parts through a Westinghouse roller hearth furnace with an Exothermic atmosphere at maximum temperature of 2050°F.

Rolock quoted on another type of tray as well as the "Serpentine," but 100 "Serpentine" trays were purchased for original equipment and have so far had many months of continuous use . . . with additional orders placed during that time.

The exclusive Rolock Serpentine construction gives freedom to expansion and contraction in both directions, minimizing warping to a greater degree than any other furnace tray Rolock has seen. It is available to order in any practical length, width and depth . . . as a tray or as the base of a basket or crate.

Rolock engineers invite your requests for solution of specific metal treating problems. Our experience covers hundreds of nationally known industrial plants.

**HEAT TREATING . . . OR CORROSION RESISTANT CATALOGS ON REQUEST.**

Offices in: PHILADELPHIA • CLEVELAND • DETROIT • HOUSTON • CHICAGO • ST. LOUIS • LOS ANGELES • MINNEAPOLIS • PITTSBURGH  
**ROLOCK INC. • 1362 KINGS HIGHWAY, FAIRFIELD, CONN.**

**JOB-ENGINEERED** for better work  
Easier Operation, Lower Cost

ARL 530

**WHERE THE TOUCH OF PRECISION**

*...Measures The Future*



**MIDVALE CRAFTSMEN FORGE  
GIANT SHAFTS FOR AMERICA'S NEWEST POWER**

Pressure Vessels  
Forgings and Rings  
Hardened and  
Ground Steel Rolls  
Corrosion and Heat  
Resisting Castings  
Ordnance & Armor

Seventy-five hundred tons of pressure under skilled hands . . . four weeks time . . . ten "soakings" for reheating . . . and a 513,000 pound ingot begins to take on the shape of a huge generator shaft. Heat treating, machining, testing and retesting follow in precision steps. The result . . . a masterpiece in steel for America's newest and largest dam . . . precision made by Midvale.

From furnace to finished product Midvale controls its quality throughout. Huge forgings, weldless gear rings, press cylinders, pressure vessels, hardened and ground steel rolls . . . Midvale makes them all. Modern equipment, complete facilities, skilled and experienced men assure you of products to your most exacting, precision specifications.

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**MIDVALE**

*Custom Steel Makers to Industry*

PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS



# *The* **iron** *Age*

## **SALUTES**

*J. W. Corey*

A firm belief in electric motors for powering machines has led him up to a company president's job.



**I**T has been 40 years since Jim Corey left Rutland, Vt., to join Reliance Electric & Engineering Co. Since he left New England as a young man barely out of his teens Jim has been convinced that you can't beat electric motors when it comes to powering machinery.

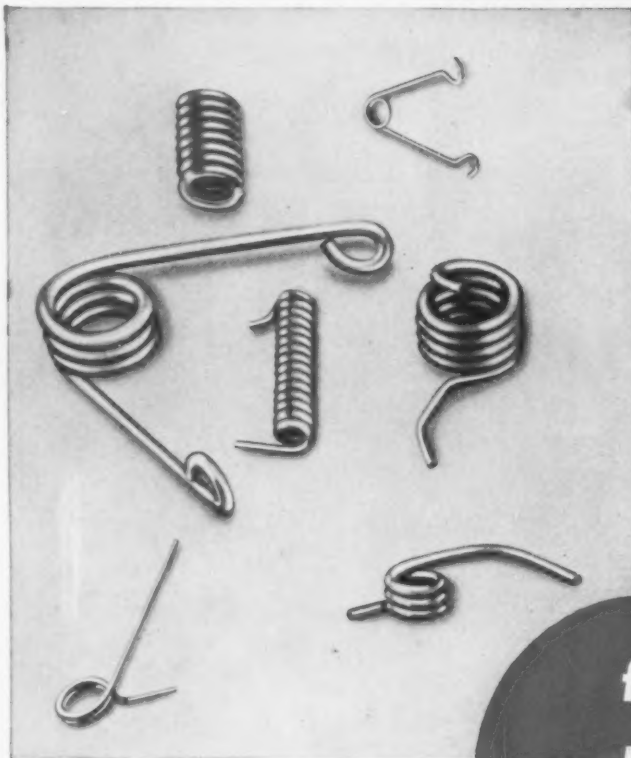
His belief has resulted in an American-way success story which started in the Reliance engineering department and led to the president's chair. Jim's associates say his success is based on liking his work and knowing how to do it.

Jim started moving up the company ladder following his return from service at the end of World War I. Before his election as president in 1944 Corey served as sales manager, sales vice-president and director of the company. A hard combination to beat is the executive with a natural interest in sales and a sure knowledge of his product.

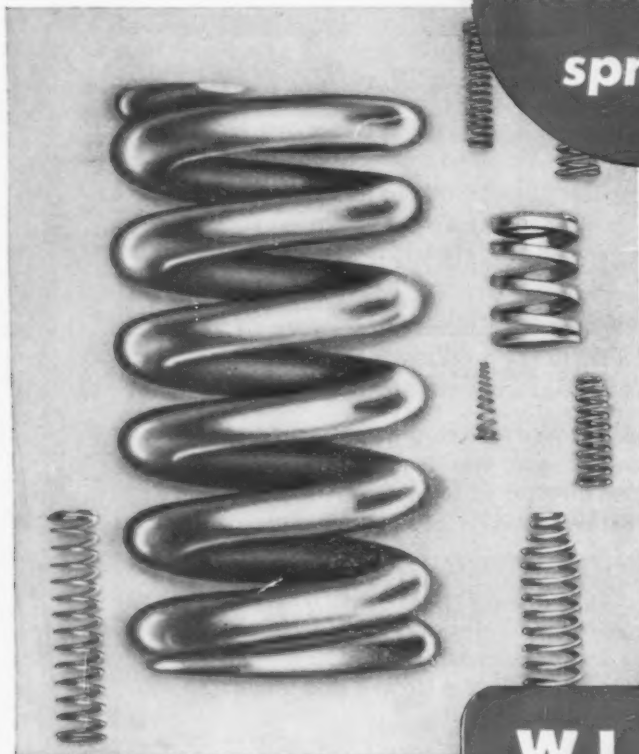
An active interest in problems which confront users of electrical equipment has kept the Cleveland executive busy in association work. In addition to the National Electrical Manufacturers Assn., Jim is also a member of the National Assn. of Manufacturers, National Manufacturers Conference Board and American Management Assn.

When he isn't wrestling with a new way to apply adjustable-speed electric motor drives to machinery of all kinds, Jim likes to follow the little white pellet around the famed Canterbury Golf Club where he is a past president. Color photography is also a hobby, helps Jim to illustrate talks before industrial and civic groups.

# WICKWIRE WIRE



for  
mechanical  
springs



2304

When you select Wickwire Wire you're always sure of wire that has the definite physical properties best suited for your particular spring application.

That's because Wickwire Wire . . . Hard Drawn, Spheroidized or Oil Tempered . . . is a product of long experience, skilled craftsmanship and completely integrated facilities starting with actual steel making. Thus, every step of its production is under constant and uninterrupted control, subject to thorough-going testing, checking and inspection.

High or low carbon steel . . . round or shaped . . . in all tempers, grades and finishes, it pays to remember—*For the Wire You Require, Check First With Wickwire.*

THE COLORADO FUEL AND IRON CORPORATION—Denver, Colorado  
THE CALIFORNIA WIRE CLOTH CORPORATION—Oakland, California  
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo  
Chicago • Detroit • New York • Philadelphia

## WICKWIRE WIRE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION  
THE COLORADO FUEL AND IRON CORPORATION



Rich  
become  
Div.,  
Niles-B  
ford, C  
Pond, v

Dr.  
vice-pr  
in char  
SPRAC  
Adams  
become  
sales.

E. F.  
preside  
VANIA  
INC.;  
named  
enginee

Fred  
in cha  
& Clos  
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Mont  
rector  
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of the  
SULPH

Clar  
man o  
CO.,  
Robert

Robe  
engine  
NORT  
succee  
has re

John  
istrati  
PLIAN

Jam  
ager o  
CORP

July

# The Iron Age

## INTRODUCES

Richard W. Banfield, vice-president, becomes manager, Small Tool & Gage Div., PRATT & WHITNEY, Div. Niles-Bement-Pond Co., West Hartford, Conn. He succeeds Charles M. Pond, who has retired.

Dr. Wilbur A. Lazier, appointed vice-president and technical director in charge of research and engineering, SPRAGUE ELECTRIC CO., North Adams, Mass.; and Neal W. Welch, becomes vice-president in charge of sales.

E. Finley Carter, appointed vice-president and technical director, SYLVANIA ELECTRIC PRODUCTS INC.; and Howard L. Richardson, named vice-president in charge of engineering operations.

Fred J. Wood, elected vice-president in charge of manufacturing, Crown & Closure Div., CROWN CORK & SEAL CO., INC., Baltimore, Md.

Montgomery R. Budd, named director of advertising, HERCULES POWDER CO., Wilmington, Del.

Robert A. Lovett, elected a member of the board of directors, FREEPORT SULPHUR CO.

Clarence Tolan, Jr., elected chairman of the board, DODGE STEEL CO., Philadelphia and Chester S. Roberts, elected president.

Robert H. Johnson, named abrasive engineer, eastern Iowa Territory, NORTON CO., Worcester, Mass. He succeeds Robert L. Schwaegerle who has retired.

John N. Wolfram, named administrative engineer, PARKER APPLIANCE CO., Cleveland.

James B. Black, Jr., appointed manager of sales, Denver, U. S. STEEL CORP.

Carl W. Sisco, appointed sales engineer, Toledo district, Steel Mill Div., SURFACE COMBUSTION CORP., Toledo. He replaces Frank J. Winder, who has retired.

Newton J. Thompson, promoted to superintendent of Transportation, LUKENS STEEL CO., Coatesville, Pa. He succeeds Richard S. Copeland, who has retired.

A. G. Bissell, named engineering consultant, Nelson Stud Welding Div., GREGORY INDUSTRIES, INC., Lorain, Ohio.

Harry R. Moseley, appointed Gulf Coast division superintendent, TEXAS EASTERN PRODUCTION CORP., Houston.

Robert R. Denison, named a full research metallurgist, Armour Research Foundation of ILLINOIS INSTITUTE OF TECHNOLOGY.

H. L. Ingram, Jr., appointed manager, Technical Development Dept., AIR REDUCTION SALES CO., New York.

Charles F. Horne, named manager, Pomona, Calif. division, CONSOLIDATED VULTEE AIRCRAFT CORP.

Jim Fentress, made manager, Petroleum sales, FOOTE MINERAL CO., Philadelphia.

John C. Ringland, appointed manager, Rochester office, STERLING ELECTRIC MOTORS, INC., Los Angeles.

T. Howard Sarine, named advertising manager, NATIONAL LEAD CO. He succeeds William Knust, who has retired. Edward A. Olson, becomes assistant advertising manager.

Howard G. Grim, promoted to general manager of operations HEPENSTALL CO., Pittsburgh; and Paul H. Daley, named assistant general manager of operations.



WILLIAM A. JAHN, named president, Inland Steel Products Co., subsidiary of Inland Steel Co.



CHRISTOPHER D. NORTON, elected vice-president, Acme Steel International and Acme Steel Overseas Co., subsidiaries of Acme Steel Co.



ARTHUR V. PETERSON, joins the staff of the vice-president in charge of engineering, American Machine & Foundry Co.



## Personnel

Russel T. Drennan, appointed eastern sales manager, Chemical Div., KAISER ALUMINUM & CHEMICAL SALES, INC.; and Joseph A. Voss, Jr., appointed assistant Eastern sales manager.

George B. Goodwin, appointed sales manager, EDGCOMB STEEL OF NEW ENGLAND, INC., Nashua, New Hampshire.

F. D. Lowell, promoted to sales manager, Rochester Products, division of GENERAL MOTORS.

C. F. Monard, appointed in charge of sales, Connecticut area, BRAEBURN ALLOY STEEL CORP., Braeburn, Pa.

E. R. Cole, named manager, Houston branch, WHEELING CORRUGATING CO.

Roy L. Smith, appointed to Philadelphia sales office, THE TRANE CO., La Crosse, Wisc.; and James J. Callahan, returns to the Newark, N. J. sales office.

Frank W. Wehrheim, appointed general sales manager, APPLETON ELECTRIC CO., Chicago.

Burnell L. Verner, appointed district manager, Pittsburgh area, LURIA BROTHERS & CO., INC. He succeeds the late Amos Bowman.

Clem H. Hohner, appointed district manager, UDYLLITE CORP., southeast sales district.

L. A. Price, appointed division manager, UNION WIRE ROPE CORP., Kansas City; R. D. Tripp, becomes district manager; and L. A. Davis, becomes Columbus, Ohio district manager.

M. Milo Millette, appointed works manager, AMERICAN CAR & FOUNDRY CO., Buffalo plant.

J. H. Jorton, rejoins the sales staff, NIAGARA MACHINE & TOOL WORKS, Philadelphia district office at Wynnewood, Pa.



C. E. MAGOON, appointed treasurer, National Tube Div., U. S. Steel Corp.



JOHN H. DYETT, appointed executive vice-president, Rome Cable Corp., Rome, N. Y.



GERARD A. WEISS, named secretary, Rome Cable Corp., Rome, N. Y.



A. C. RUDY, becomes manager, New York sales branch, Berger Mfg. Div., Republic Steel Corp.

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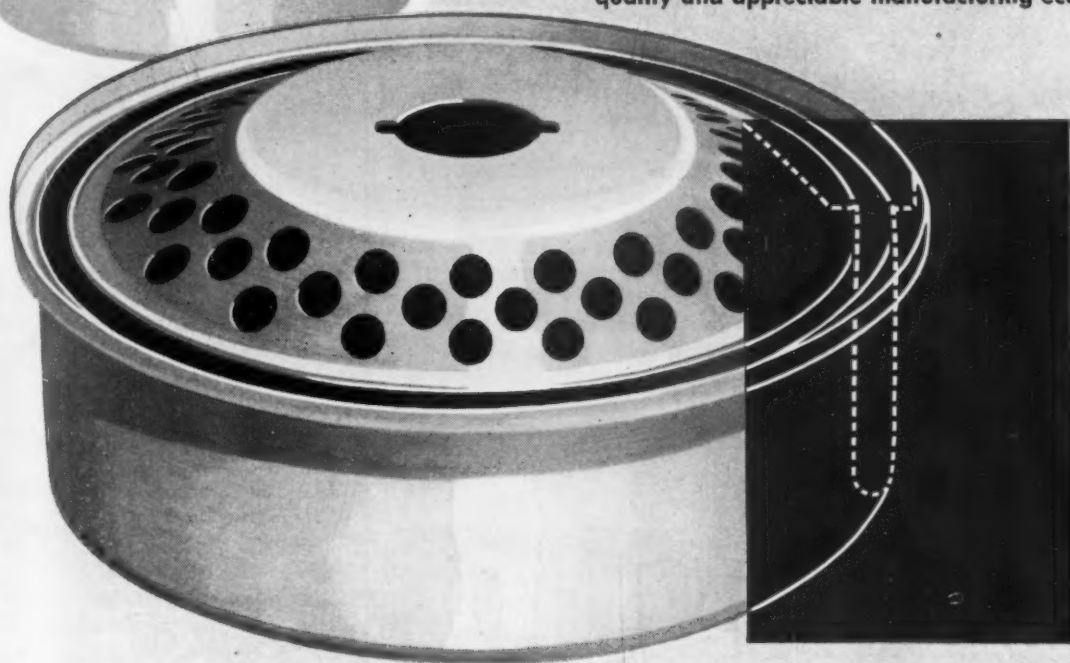
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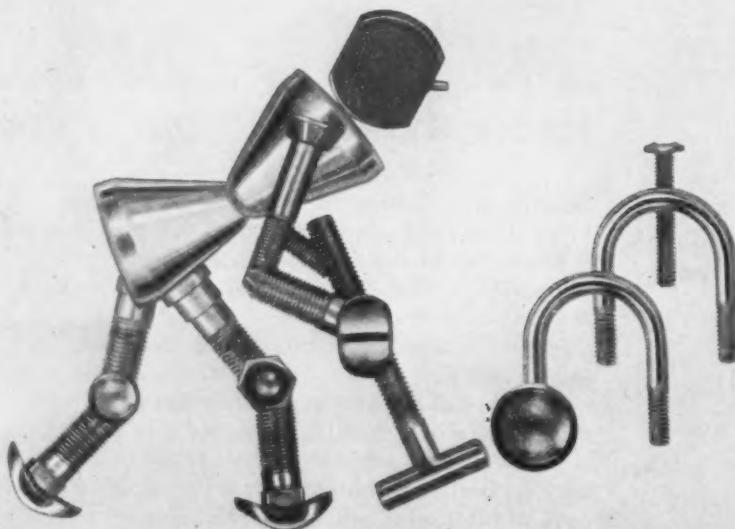
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### Personnel

#### Continued

**Lawton Howell**, appointed works controller, Sanderson-Halcomb Works, Syracuse, New York, CRUCIBLE STEEL CO. OF AMERICA, Pittsburgh.

**Charles E. Reiter**, appointed manager, General Order Dept., REPUBLIC STEEL CORP., Cleveland. He succeeds R. J. Morgan, who has retired.

**Robert S. Hughes**, promoted to assistant to manager of the Wheeling Sales Div., WHEELING CORRUGATING CO., Wheeling, W. Va.

**Herbert C. Salzer**, appointed steel purchasing agent, MOTOR WHEEL CORP., Lansing, Mich.

**George A. Marsh**, appointed master mechanic, WAYNE FOUNDRY & STAMPING CO., Detroit.

**Robert F. Elmiger**, has been appointed sales analyst, Alloy Tube Div., Union, N. J., THE CARPENTER STEEL CO.

**John C. Bovan**, and **George Baumgartner**, join Engineering & Research Depts., ATLAS MINERAL PRODUCTS CO.

**J. J. Merrill**, appointed Boston division manager, A. M. BYERS CO.

**F. E. Walker, Jr.**, appointed central-western district sales manager, TWIN COACH CO.

**Raymond J. Nagy**, appointed sales representative, Connecticut, ADAMAS CARBIDE CORP., Harrison, N. J.

**Henry G. Zucker, Jr.**, appointed sales representative, Chicago area, HANSON-VAN WINKLE-MUNNING CO., Matawan, N. J.

**E. Thomas Erdmann, Jr.**, appointed sales representative, Indianapolis district sales office, SHARON STEEL CORP., Sharon, Pa.

#### OBITUARIES

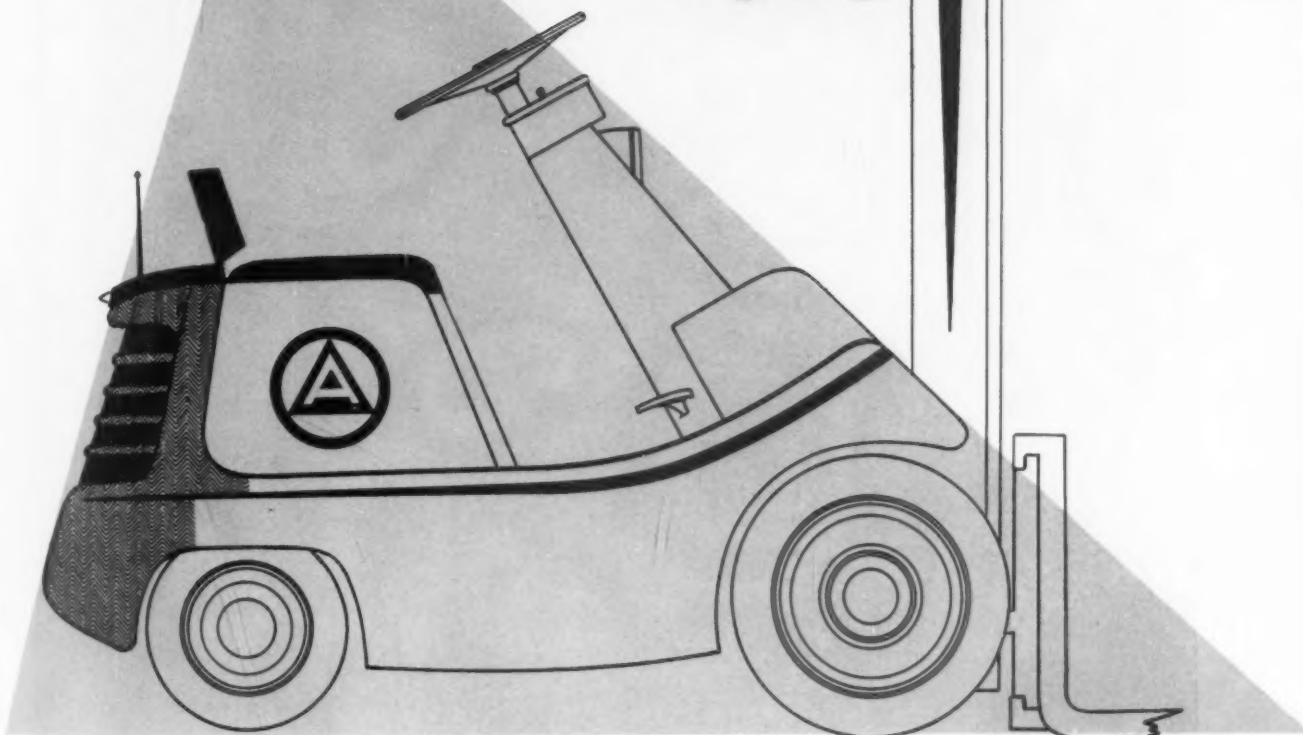
**Lucian F. Adams**, 58, auditor, Dravo Corp., Pittsburgh, Pa., and its subsidiary, Fulton-Portsmouth Bridge Co., Portsmouth, Ohio, recently after a short illness.



Precision look for precision operation—

# LIFT TRUCKS

## Raise Level of Industrial Styling



DESIGN is based on simple triangular shape for clean cut appearance and positive trade mark "A".

By Alexis de Sakhnoffsky  
Industrial and Automotive Stylist  
Chicago

♦ Stability, maneuverability and safety have been built into a new streamlined fork truck . . . All components were engineered into an attractive, yet rugged truck made with a minimum of tool and die costs.

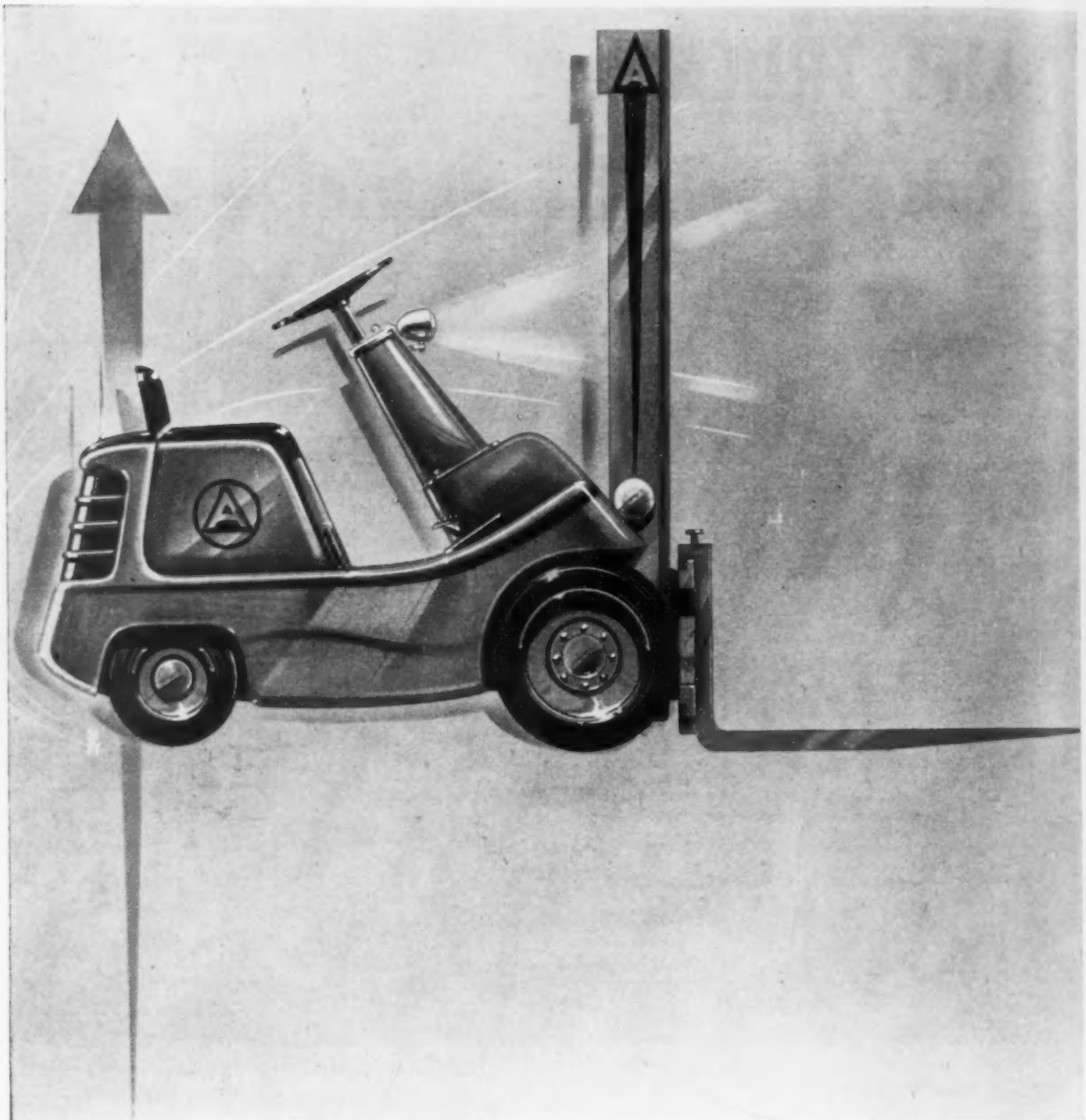
♦ Based on simple triangular shape, the truck seems to hug the ground, stands out as a trademark and can easily be identified . . . Maintenance is lower as operators take pride in its appearance and take care of it as they do their own cars.

♦ WHY STYLE an industrial truck? What are the advantages of putting streamlined shapes on slow vehicles, operating in crowded quarters, whose buyers are more interested in performance than looks? Fought by industry 20 years ago, modern "looks," both functional and psychological, are now enthusiastically accepted.

Nowadays manufacturers of tube mills, machine tools and other heavy equipment add eye appeal to their products. One reason has been that competition from Sweden, Germany and Switzerland has convinced American industry that performance alone is not enough—precision look results in precision operation.

Operators are proud of handsome machines and keep them clean and efficient. A light gray machine shows dirt easier and will be wiped off

**Stability, maneuverability and safety were emphasized . . . Design required easy engine access, controls conveniently grouped . . .**



STYLISH appearance aids in the functional features and psychological appeal to operators and buyers.

ten times as often as the old-fashioned black one. Fine lathe machinists are skilled men who worship precision machinery particularly when it looks as good as it is.

Under this philosophy, the latest "Dynamotive" gas-electric truck recently brought out by the Automatic Transportation Co. was designed.

Cursory study proved that in 1952 the lift truck industry lay untouched by stylist's hands. Possibly the many limitations which it imposes had kept industrial designers away. An industrial lift truck has to be "clean"—no protruding corners should interfere with its operations in close quarters. It has to be invulnerable—no

chrome parts or decorations which would rust if left out in the rain. It has to be safe—nothing should obscure driver's vision. Access to the engine should be easy, controls conveniently grouped. Finally from the sales angle it should be easily identified as the product of the firm which manufactured it.

A functional design to cover all these requirements included a host of factors. The function of the truck is lifting and carrying loads often in cramped quarters. Consequently the features to be emphasized were stability, maneuverability and safety. An arbitrary point was selected and the main outside surfaces

**Main outside lines were drawn to converge at an arbitrary point . . .  
This produced a design which "sat" on the ground . . .**



**RUGGEDNESS** is maintained both in looks and in fact and safety, visibility and maneuverability are enhanced.

were sketched in a manner to converge towards this point, which became the apex of the pyramid as shown in the drawing. The resulting effect produced a design which "sat" on the ground. The toe-in also helped achieve a speedier, lighter appearance which is lacking on all truck designs with vertical sides. Minimum of overhang was allowed, with all corners neatly rounded to allow unimpeded maneuvers in close quarters.

The majority of lift trucks have high-built structures in front of the driver. They are used to support the steering column and some of the controls, but at the same time effectively ob-

struct the operator's vision of the lifting forks. Since the motor of the "Dynamotive" occupies only about two-thirds of the floor width, the hood over it was confined to a small shroud, allowing for extra room for feet, easy entrance and exit from both sides and the maximum amount of vision in all directions.

All elements of an industrial vehicle have to look rugged. So often, a substantially designed truck looks weak, when its steering wheel is perched on top of a spindly column, regardless of how well it may be anchored below. A number of such items are usually found on any product and correcting them can be called "psy-



**Truck has a regular chassis body with hood-sides, engine cover, lower side panels and a cast counterweight . . . Product identification is based on shape, color and an unusual trademark . . .**

chological styling." This is the reason for the tapered shroud over the steering column, which adds so much to the "pyramid" design. Easily removable (it is made in two parts) it also houses a number of important relays, which have to be readily accessible at all times.

Die costs are painful dampers of designer's enthusiasms. They require a thorough knowledge of short cuts in the art of tailoring sheet metal and getting effects out of castings. Great many lift trucks are of the monocoque (chassis-body) construction where side members provide the chassis and body, with a counterweight bolted on. Normally, the counterweight is sort of left alone, without much attempt to blend it with the rest of the truck.

"Dynamotive" is composed of a regular chassis body—constituted of hood-sides, engine cover and lower side panels, with a cast counterweight. The problem was to weld these components into an attractive, homogeneous ensemble with a minimum of tool and die costs.

#### **Counterweight blended in**

Since castings do not require dies, the counterweight received considerable attention. As may be noticed on the sketch and photos this important part was blended to the truck body by color striping (top of the counterweight is designed to follow the shape of the seat and is painted to match). The stripe underlining the floor sweep is carried on the counterweight, and horizontal bars of the grille, which are carried into the side view. The casting joins the body at the engine cover. A shelf emphasizes this joint and follows the floor line in a continuous, graceful upsweep. Since the engine covers are flat with bent corners and lower panels require only trimming, the dies will be confined to the steering column shroud and motor cover.

Instant identification of a new product is based on a number of factors, among them color, shape and characteristic trademark or lettering. In this case, an orange and black

color scheme adopted by the whole industry for safety reasons was a must. Naturally, it was not practical to introduce a third color. It also happened that most of competitive products used the same type of plain, stencil-like type for the company's name. One of the competitive firms even had the same number of letters in its name as Automatic, which made the use of the regular trade name inadvisable.

Since "Dynamotive" is a departure of the regular line of electric trucks built by Automatic it was decided that the new truck should be branded. A new, simple, identifying trademark on the sides of the truck was highly desirable. Since the booms extend above car roofs or planes (in airport use), they provide an ideal spot for an unusual sign. Basically the simplest trademarks live the longest. Most of the immortal designs are based on simple geometric shapes. They impress the eye immediately and are easily remembered. Examples are the three-pronged star in a circle which has been used on Mercedes cars from times immemorial, the square plaque with RR of Rolls-Royce automobiles and the white dot on Schaeffer pens.

The triangle was finally chosen for three reasons. It is ideal in combination with the letter "A" (Automatic), it is "architecturally correct" by having a broad base and finally it is the top of an arrow, which was selected as a symbol of lifting—the function of this truck. The whole thing dove-tailed like a finished crosswork puzzle.

#### **Easily identified at distance**

It is obvious that with the black triangle on the sides and the tapered arrow on its booms, the Dynamotive truck will be easily identified a half mile away where other trucks painted the same color will be anonymous within half a block. The characteristic silhouette was thus obtained by: Floor sweep extended all the way to the counterweight, "architecturally correct" tapered outside surfaces, and brutally simple markings on sides and front.



**The Author—Count Alexis de Sakhnoffsky**

Fleeing Russia in 1917, Count Sakhnoffsky studied engineering arts and design in Belgium and France. For six consecutive years he won the Monte Carlo Elegance Contest Grand Prize for auto design. Designer of many lines of industrial and consumer products.

Heat and freeze them—

# Better Heat Treating For BETTER BEARINGS



By Herb Habart

Bantam Bearings Div.  
The Torrington Co.  
South Bend

♦ Specialized metallurgy and hardening procedures have been developed to meet the exacting needs of modern anti-friction bearing manufacture . . . Bearings, made from through-hardening or case hardening steels, must withstand the tough conditions imposed by modern machine design.

♦ Shock and wear resistance and good core hardening power govern selection of case hardening steels . . . Hardening power is the determining factor in selection of through-hardening steels.

♦ **HARDENING PROCEDURES** for steels used in anti-friction bearings are of such exacting nature that a specialized field for their metallurgy has developed. Steels used in most anti-friction bearings, see Table, are either through hardening or case hardening types. The through hardening steels, basically high carbon-chromium alloys, offer a good range of hardenability.

As cross-sections become larger, the increased hardening power required is provided by the different grades. The 50100 steel is used for small, thin parts such as rollers for needle bearings and small diameter balls. As the sections and sizes increase, more alloy is needed. Most parts are made from 52100 and the modified-1 grades. The modified-2 steel is used for parts with unusually heavy cross-sections. Some overlapping in the grades.

The through hardening steels are normalized and spheroidized before machining. The spheroidize annealing provides best machinability and optimum hardenability. Fig. 2 shows a typical spheroidized structure.

Heat treatment of the through hardening steels consists of heating to and holding at a selected temperature, quenching, and tempering. Heating temperatures range between 1440°

and 1525°F, depending on the steel grade and cross-section. Holding time at temperature rarely exceeds 2 hr.

During the heating and holding cycle, carbide is dissolved to a degree needed to provide adequate hardening. At the end of the com-

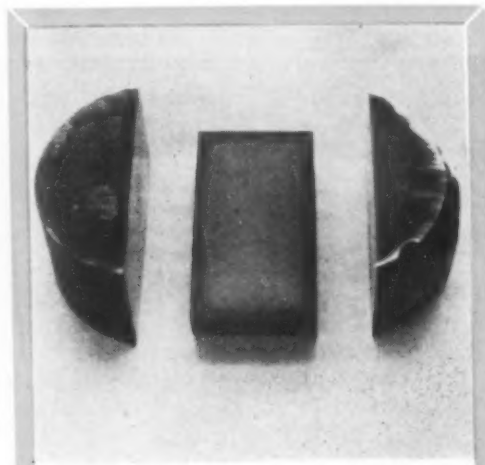


FIG. 1—Test blocks are carburized with each batch of bearing parts. During cycle, block is removed, given short cycle hardening. After splitting, center section is used to check case.

**Refrigeration and first stage tempering have been used to achieve equivalent decomposition of retained austenite . . .**

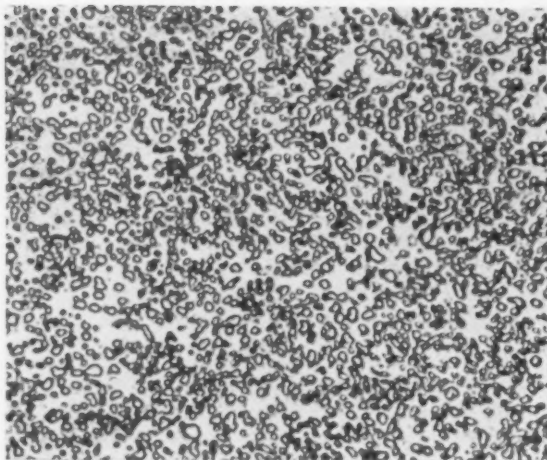


FIG. 2—Spheroidized, through-hardened steel showing iron-chromium carbides in soft ferrite. 1000X

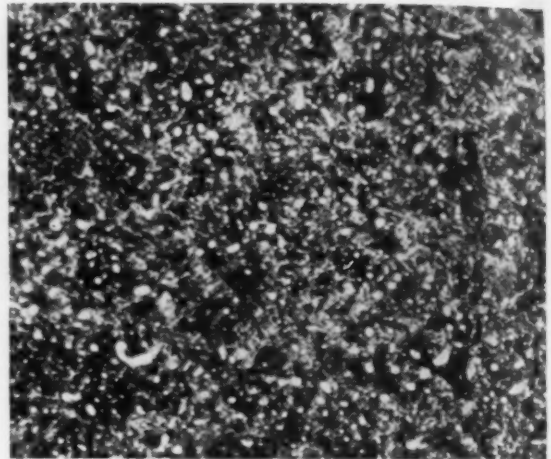


FIG. 3—Number, size of spheroids are reduced after through-hardening, tempering. 1000X

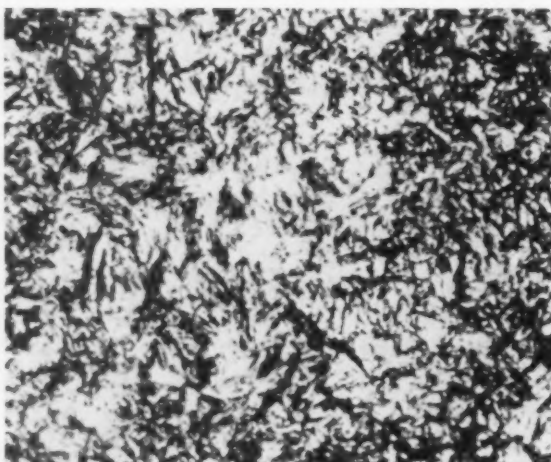


FIG. 4—Austenite in single-quenched low-alloy carburizing steel takes irregular pattern. 1000X

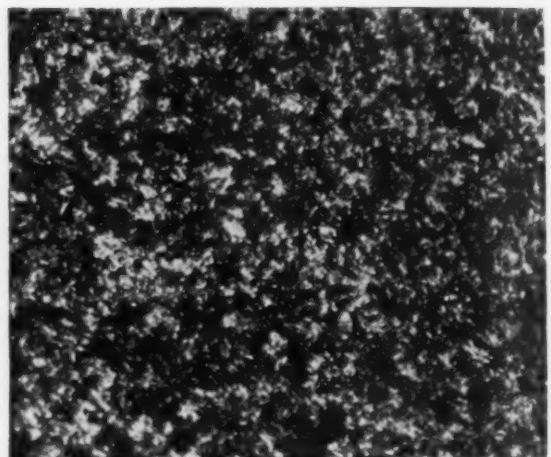


FIG. 5—Low-alloy carburizing type case structure after double quenching. Note finer grain structure. 1000X

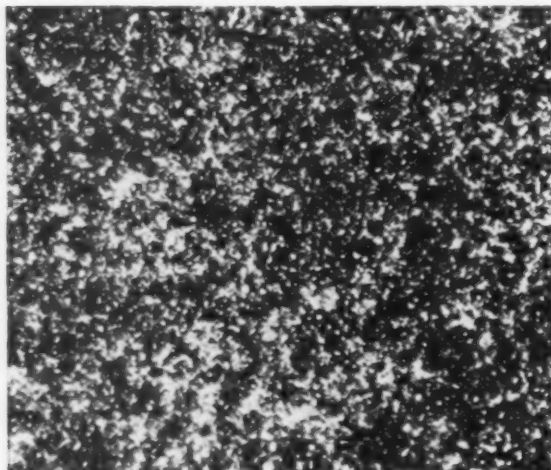


FIG. 6—Final structure of the case of the 4 pct Ni, 1.5 pct Cr Krupp steel. 1000X



BEARING RACE is die-quenched at Bantam Bearing Div. plant of the Torrington Co., South Bend.



plete heating cycle, it is necessary to quench. Quench mediums are water, warm oil at 125° to 175°F, and either hot salt or hot oil from 350° to 500°F. The latter, known as Martempering, is actually a quench.

Water quenched parts will not yield uniform results or as consistent service as oil quenched or Martempered parts. At present, most work is oil quenched and a steadily increasing percentage is being Martempered. With Martempering, quench crack losses are nil and there is less distortion.

#### Four tempering stages used

In the as-quenched condition, steels are stressed, brittle, and may contain undesirable retained austenite. A temper or draw is applied to the parts after quenching.

Four stages of tempering are used. The first, at temperatures below 400°F, relieves quenching stresses and tempers the martensite. The second, between 400° and 600°F, relieves stresses, tempers the martensite, reduces brittleness and, most important, changes retained austenite to bainite. The third stage also starts at some 400°F, thereby overlapping the second and causing several changes, chief of which is loss of hardness. The fourth stage is at temperatures over 1000°F and is beyond bearing practices.

Generally, the through hardening steels are tempered at temperatures within the second stage where retained austenite is changed to bainite. Care is needed to avoid serious hardness losses because of the overlapping third stage. This tempering results in final hardness values of Rc 58 to 61.

A few special bearings are tempered in the first or lower temperature stage and will have final hardness ranging Rc 60 to 64. Bearings tempered in this first stage cannot be used for applications involving heat, because retained austenite may transform and cause size changes.

#### Choice based on hardening power

Refrigeration and first stage tempering have been used to achieve the equivalent decomposition of retained austenite obtained in second stage tempering. Higher hardness is sought. However, unless the refrigeration is done at or below liquid air temperatures, sufficient retained austenite will remain to still necessitate tempering in the second stage.

Exclusive of economic reasons, choice of a through hardening steel is based solely on hardening power, whereas the choice of a case hardening steel is based on shock resistance, core hardening power, and wear resistance. All the case hardening steels, see Table, contain nickel. In addition, some contain chromium, some molybdenum and some both chromium and molybdenum. The steels have been de-

veloped to possess varying degrees of shock resistance and core hardening power and yet remain within the limitations of the alloy conservation program. Wear resistance is practically uniform among the different grades.

The Krupp steel, 4 pct Ni and 1.5 pct Cr, has highest shock resistance and core hardening power of the grades listed. It can be used in extremely heavy sections with practically no danger from failure to harden. The 3310 steel is used for certain bearing parts which normally would be of Krupp. Due to the current nickel situation this is the best available alternate. As shock resistance and core hardness requirements are lessened, so is alloy content down through 4320, 4620, 4720 and 8620. Here again, some bearings must be made of a lower than normal nickel content steel because of the nickel supply.

Metallurgy for the case-hardened steels is more complex than for the through-hardened steels. Materials like Krupp and 3310 require careful normalizing and tempering to adequately soften for machining. Steels like 4320, 4620, 4720 and 8620 can be machined in almost any condition except hardened. Most of these lower alloy steels are machined in either hot-rolled, normalized, or cold-worked states, the choice being fitted to machining practices.

#### Most carbon on surface

First heat treat operation after machining is to carburize to some pre-established case depth. The depths are based on experience. Carburizing is done, almost throughout industry, at 1700°F. It can be done in solid, liquid, or gas mediums but 90 pct or better is done in gas. By controlling the composition of the gas, the maximum carbon content can be held reasonably well to certain limits, generally 0.85 pct minimum and 1.00 pct maximum.

Case depth is dependent upon the time held at the carburizing temperature. Floyd Harris developed a simple formula for calculating, namely:

Case depth in inches =  $K\sqrt{\text{Time in hours}}$

Where K is a temperature dependent constant

For 1700°F, K is 0.025. Thus, a shallow case of 0.010 in., as applied to some needle bearing races can be obtained in about 15 min at 1700°F. The 0.300 in. depth applied to large steel mill back-up bearings takes some 144 at 1700°F.

In a carburized case, the highest percentage of carbon is along the surface. The amount of carbon decreases with depth to the core. Metallurgically, there are three zones in this carbon gradient. The outer, of highest carbon, is the hyper-eutectoid zone. The central, of slightly lower carbon, is the eutectoid zone. The inner area, where carbon content declines to that of the core, is the hypo-eutectoid zone. If the carburizing operation is well controlled, each

**A reliable and rapid method for reassuring case depth, carbon concentration was developed . . .**

zone will occupy about one-third of the case depth.

A reliable and rapid method for measuring case depth and carbon concentration was needed. The method used at Bantam Div. satisfied these points. Test pieces are 1-in. slices cut from 2-in. bar stock. For any load, the test pieces are the same grade of steel as the bearing parts. Test pieces are positioned so they can be readily removed and still give a true picture regarding the response to the carburizing treatment. Sufficient test pieces are included so that several checks can be made throughout the cycle.

**Use the middle slice**

When a test piece is removed from a furnace, it is given a short cycle hardening treatment and sectioned as shown in Fig. 1. The two side pieces are discarded and all work is done on the middle slice. One face is polished and then treated with 10 pct nitric acid solution. This etches the surface and because the various zones and core etch at different rates, the general character of the applied case can be seen.

Microscopic examination is used to rate the percentage of carbon in the outer or hyper-eutectoid zone. Rockwell hardness tests along taper paths show response to heat treatment. The results show whether corrections need be made to the carburizing gases. No load is removed until the quality and depth of case are of proper order.

When parts have acquired the desired case, they may be hardened by single or double quenching. The single quench, in wide use for low alloy steels like 8620, 4720 and 4620, should not be used for higher alloy steels like 4320, 3310 and Krupp. The double quench can be used on any type.

The single quench treatment consists of

lowering the temperature from 1700°F to some selected point between 1450° and 1500°F, holding to equalize, oil quenching, and tempering.

The double quench treatment consists of oil quenching either directly from 1700°F or, after a short cool to between 1600° and 1625°F, hardening as a separate step. The short cool has no metallurgical value but its use is rather common in order to reduce excessive destruction of expensive alloy handling fixtures. The low alloy steels are then hardened by reheating to between 1450° and 1475°F, equalizing, oil quenching, and tempering.

High alloy steels like 4320, 3310 and Krupp require a subcritical spheroidizing treatment between the two quench operations. As quenched from the carburizing operation, the hypereutectoid and the eutectoid zones are quite austenitic. The spheroidize treatment decomposes that austenite and coalesces the carbides without permitting diffusion to grain boundaries.

Treatment consists of heating for 24 hr at 1100° to 1150°F, then air cooling. The combination of the quench from carburizing and the subcritical spheroidize are the major steps in building high shock resistance. With this combination, brittle carbide network in the case is avoided. The parts are quite soft after the 1100° to 1150°F treatment.

**Two methods available**

To harden, the parts are heated to a selected temperature near 1475°F, held to equalize, and oil quenched, usually on sizing fixtures. This quench refines the grain, hardens the core, and partially hardens the case. There may be considerable retained austenite in the case after this quench. The austenite can be transformed by either of two methods. One is to temper in the second stage similar to the practice for through hardened steels. The second method is to continue the quench down to low temperature levels, followed by tempering.

Micrographs illustrate the several structures resulting from various heat treatments. Figs. 2 and 3 show the structures of through harden-

TABLE

**ANALYSIS OF BEARING STEELS**

Grade	Carbon, Pct	Manganese, Pct	Silicon, Pct	Nickel, Pct	Chromium, Pct	Molybdenum, Pct
Through Hardening						
50100	0.95 to 1.10	0.25 to 0.45	0.20 to 0.35	.....	0.40 to 0.60	.....
51100	0.95 to 1.10	0.25 to 0.45	0.20 to 0.35	.....	0.90 to .125	.....
52100	0.95 to 1.10	0.25 to 0.45	0.20 to 0.35	.....	1.30 to 1.60	.....
Mod-1	0.90 to 1.05	0.95 to 1.25	0.50 to 0.70	.....	0.90 to 1.15	.....
Mod-2	0.85 to 1.00	1.40 to 1.70	0.60 to 0.80	.....	1.40 to 1.70	.....
Case Hardening						
Krupp	0.17 Max	0.40 to 0.60	0.20 to 0.35	3.75 to 4.25	1.25 to 1.60	.....
3310	0.08 to 0.13	0.45 to 0.60	0.20 to 0.35	3.25 to 3.75	1.40 to 1.75	.....
4320	0.17 to 0.22	0.45 to 0.65	0.20 to 0.35	1.65 to 2.00	0.40 to 0.60	0.20 to 0.30
4620	0.17 to 0.22	0.45 to 0.65	0.20 to 0.35	1.65 to 2.00	.....	0.20 to 0.30
4720	0.17 to 0.22	0.50 to 0.70	0.20 to 0.35	0.90 to 1.20	0.35 to 0.55	0.15 to 0.25
8620	0.18 to 0.23	0.70 to 0.90	0.20 to 0.35	0.40 to 0.70	0.40 to 0.60	0.18 to 0.25



CLOSE FURNACE CONTROL in these pit carburizing units is important in meeting demand for better bearings.

ing steels before and after heat treatment. In the spheroidized condition, Fig. 2, the background or matrix is soft ferrite and the spheroids are iron-chromium carbides. The number and size of these spheroids are reduced by solution during heat treatment to provide enough carbon to change the matrix from ferrite to austenite to martensite to tempered martensite.

The final structure, Fig. 3, consists of a tempered martensitic matrix with some carbides still remaining. In heat treating, temperatures and holding times must be adjusted to get enough carbide into solution for adequate hardening and yet refrain from dissolving too much. If excess carbide is dissolved, there is danger of either quench cracking or excessive retained austenite. If insufficient carbide is dissolved, the desired hardness level will not be reached. The undissolved carbides promote wear resistance.

For the carburized steels, there are differences in structures for parts that are single-quenched, double-quenched, and double-quenched with the intermediate spheroidize. These differences are shown in Figs. 4, 5 and 6. The single quench structure usually contains a visible amount of retained austenite and has an irregular triangular pattern. The double-quench structure is much more homogeneous and while it too contains a trace of austenite, the latter is not visible. Also, the double-quench structure is finer grained.

The double-quench structure with the intermediate spheroidize shows minute carbide globules distributed in a very fine grained, tempered martensite matrix. This structure is homogeneous and, in some respects, resembles that of the through hardening steel shown by Fig. 3, except that the globular carbides are smaller and fewer in number.

## NEW BOOKS

*"Mathematical Physics,"* by Donald H. Menzel. Designed for advanced and graduate courses in mathematical physics, the book requires a good working knowledge of differential and integral calculus. Although primarily concerned with classical physics, several topics such as the electron theory or general relativity are covered in considerable detail. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y. \$11.35. 412 p.

*"Successful Labor Relations for Small Business,"* by James Menzies Black and J. George Piccoli. Here is a practical guide in handling labor relations in the smaller plant. Shows how to set up the written policy needed for labor relations procedure, and provides basic rules of strategy to

fellow when faced with an organizing drive. The book is largely based on the experience of 600 manufacturers making up the Associated Industries of Cleveland. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36. \$6.00. 423 p.

*"Aluminum In Iron and Steel,"* by Samuel L. Case and Kent R. Van Horn. The first of a new series of monographs of the Alloys of Iron Research provides an exhaustive, critical world-wide review of research on use of aluminum in modern ferrous metallurgy. Covers use of aluminum as a deoxidizer and as an alloy. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. \$8.50. 478 p.



## Fast moving parts—

◆ Demand for lower unit finishing costs led to development of these highly mechanized rocket body finishing lines . . . Components, some steel and others aluminum, are handled at high speeds on separate lines.

◆ Steel parts receive an alkaline rinse and phosphoric and chromic acid dips before painting . . . Painted parts are oven dried.

◆ Tail assemblies, largely aluminum, must have uniformly clean, etched surfaces for spotwelding at final assembly . . . Masks are used to keep paint off some surfaces . . . Automatic paint spray systems coat both inside and outside surfaces of components.

◆ LOWER FINISHING COSTS were an important factor in development of a highly mechanized bazooka rocket finishing department at Lansing, Mich. But the exacting nature of government specifications and the constant pressure of keeping pace with production were important considerations in developing the unusual setup at the Oldsmobile Div., General Motors Corp.

Because of different construction and finishing specifications, rocket head, body, and tail assemblies are not all finished in the same manner. Head assemblies, excepting cones, are of steel. Most tail assembly components are aluminum.

Before the steel bodies of head assemblies are painted, they are chemically cleaned and phosphated. This insures good adhesion of organic coatings and inhibits rust. Treatment is done in a side arm pickling machine of the



By Paul J. Straight

Process Engineer  
Oldsmobile Div., General Motors Corp.  
Lansing, Mich.

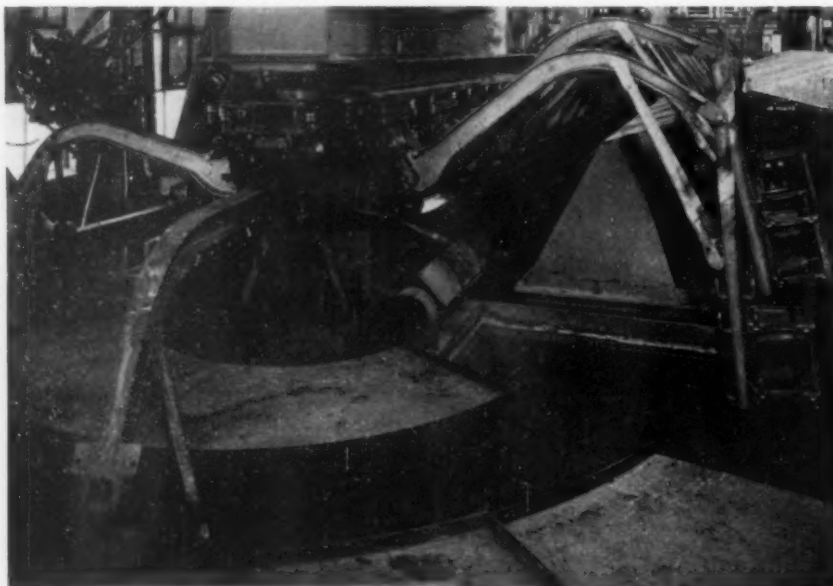
## .... Mechanize

type used in many plating operations.

Parts, hand loaded and unloaded in stainless steel wire cages, go through the machine on a precisely timed automatic cycle. Parts are cleaned in the first tank for 3½ min in an alkaline solution at 190°F. After a 1-min rinse, the parts go through an inhibited phosphoric acid dip for 4¼ min at 175°F. This is followed by two 1-min rinses in running cold water, a 1-min alkali rinse at 180°F, a water rinse at 130°F for 1 min, a phosphate coating at 160°F for 3½ min.

Parts are then rinsed for 1 min in cold water and for 1 min in a dilute chromic acid solution. They are dried by forced, hot air in a tunnel and return to the loading and unloading area. Parts reach this area on one roller conveyor and go out on another. Operators wear gloves to avoid fingermarks on the parts.

For painting, each head assembly is set ver-



HEAD ASSEMBLIES for the 3.5-in bazooka rocket have rust and scale removed and are phosphate coated prior to painting in this pickling and phosphate coating machine. The caterpillar-like conveyor takes the head assemblies through five solutions and five rinses during the 43-min operation.

**Steel parts are chemically cleaned and phosphated  
before painting to inhibit rust, get better adhesion**

## ***Finishing To Cut Costs***

tically on a conveyor spindle. Assemblies travel through a water-curtained spray booth and then through an infrared oven. They stay in the oven about 2½ min and reach a temperature of about 165°F. Head assemblies rotate slowly while passing through the spray booth and oven. This is made possible by having a pulley at the bottom of each supporting spindle engage a track.

Three guns are used in the spray booth. Each is set to spray one part of each assembly. Each gun operates only when an assembly is in position. By the time an assembly leaves the booth, its entire outer surface has been coated with an olive drab, lusterless, quick drying synthetic enamel. This styrenated, alkyd type enamel dries partly by evaporation of the solvent and partly by oxidation or polymerization.

After drying, assemblies are removed from the conveyor by hand and blown out with an

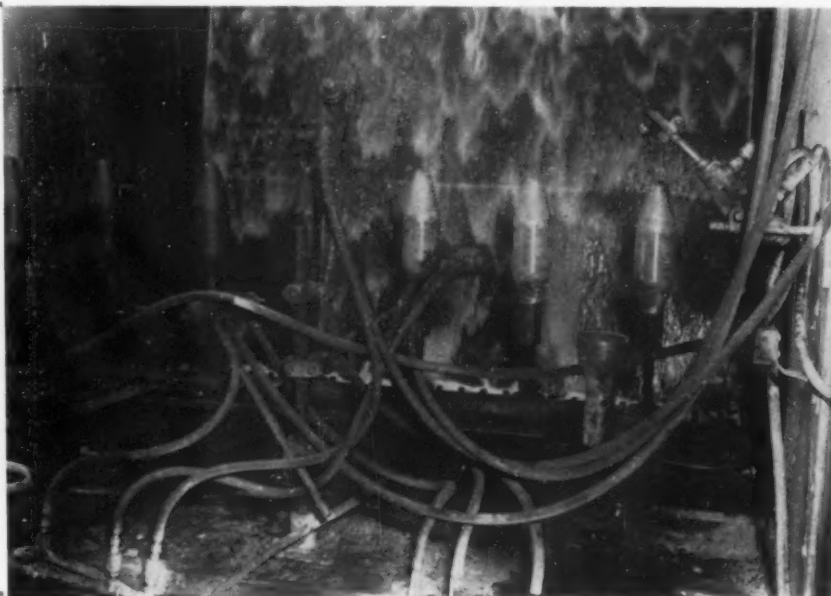
air jet. The bottom open end of each assembly is placed in a hole in a special table. Two spray nozzles from below rise inside the head. One nozzle, as it moves up and down, sprays the interior with an acidproof black air-drying enamel. The other sprays a lubricant on the thread just inside the lower end of the assembly.

Some head assemblies, designed for practice use, are made from cast iron. For identification, these are given a light blue coating instead of the olive drab applied to combat heads. Practice heads are handled on a separate conveyor but go through finishing operations similar to those already described.

Bodies of the rocket are processed on a separate line. After initial forming, the bodies are washed, machined and rewashed. A special floor type conveyor carries the bodies upright on individual fixtures on 3-in. centers. Bodies are carried to several machining and inspection

**WATER - CURTAINED**  
booth through which head  
assemblies are conveyed.  
Assemblies rotate as spray  
guns automatically apply  
a synthetic enamel.

After quick drying paint  
has hardened, assemblies  
are removed from con-  
veyor and blown out with  
an air jet. Assemblies are  
then sprayed on inside.



**Dip type conveyor helps get uniformly clean, etched aluminum surfaces for better spotwelds . . .**

stations as well as through the washer. The bodies pass through the washer before and after machining.

After the bodies are heat treated, heat treating stains are removed with phosphoric acid at 175°F in a dip tank operation. Stainless steel baskets which hold 72 bodies are used in this operation. After the bodies have been machined, they are racked, upright, eight to a hanger, and carried by monorail, through a Bonderizing machine, to final assembly and paint areas. The Bonderizing machine consists of a spray wash stage, spray rinse stage, a dip Bonderizing tank, two more spray rinses and a hot, forced air, blow-off.

The monorail curves down and up so the hangers are automatically dipped into the phosphate coating solution. Each body passes through the machine twice and is in the phosphate coating solution approximately 4 min each time through. Prior to assembly, the body is sprayed on the inside with ethyl cellulose lacquer. A spray nozzle, mounted above the conveyor, is synchronized to travel a short distance with the conveyor so it can enter, spray,

and leave the bodies as they pass. The spray operates only when a body is in position. Blue dye is added so that coverage can be checked easily.

Tail assemblies are largely aluminum and component parts are spotwelded into assemblies. This requires uniformly clean, etched surfaces. A dip type, conveyorized machine is used. The process includes solvent-emulsion cleaning, alkali cleaning, water rinsing, phosphoric acid etching and final rinsing. Parts are dried while moving to the loading and unloading station. Control checks are made each shift by measuring the surface resistance of the etched aluminum. A surface resistance of 25 micro-ohms or less indicates a clean surface and assures good welding.

Tail assemblies are conveyed along the assembly line. Wooden pegs hold the parts. After the body and tail are assembled, operators add metal masks to the tail. One type of mask, a stamping, includes two rings with channel sections. These cover the contact band and latch groove and are fastened by toggle clamps. This work is done on a conveyor with vertical spindles which support each assembly. At the base of each spindle is a V-groove pulley. When the pulley contacts a spindle rotating unit in the spray booths the spindles turn.

In the first booth, six spray guns apply a No. 3-201 yellow zinc-chromate primer to the masked aluminum tail assembly. Each gun is



AFTER SPRAY PAINTING of exterior surfaces, head assemblies pass on this conveyor through infrared drying oven, right. Interior surface is then painted.



EACH HEAD ASSEMBLY is placed over a hole in this table. A spray nozzle, raised and lowered from under the table, applies an acidproof black finish on interior.

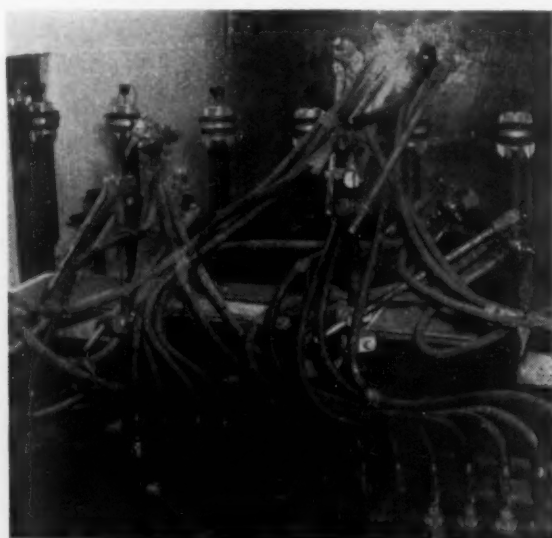




**PARTS ARE LOADED** and unloaded on paint conveyor. Inspection conveyor is shown in foreground. Metal masks ride on carriers between spindles for parts.



**WOMEN APPLY** metal masks taken from stands between rocket tail assemblies as the latter move toward the spray booth on upright conveyor spindles.



**YELLOW ZINC CHROMATE** primer is applied automatically by seven spray guns as tail assemblies on the conveyor pass (while rotating) through this booth.



**AFTER ROCKET** tail assemblies have received spray coats of primer and finish lacquer they are conveyed through this infrared oven for drying. Note Masks.

aimed, to cover a particular surface as the assembly rotates. The guns spray only when an assembly is in correct position.

Primer is then baked in an infrared oven for about  $1\frac{1}{2}$  min before the parts enter the second spray booth where the final coat is applied. Nine spray guns apply a quick drying lusterless enamel. Assemblies then enter the infrared drying oven where the finish is baked for  $2\frac{1}{2}$  min at about  $150^{\circ}\text{F}$ . Assemblies pass through an air jet to cool.

Metal masks are laid on small carriers which

ride on the conveyor between each pair of rotating spindles. Thus, the masks are close at hand for the next assembly. Spray which seeps under the masks, is automatically removed by a wire brush before leaving the paint conveyor.

Painted assemblies are transferred to another conveyor for inspection. Those which pass inspection continue to an unloading station. They are then set in a fixture that carries them by an inking pad. Here the part number is stamped on each assembly before it is placed in a shipping carton.

# How to IMPROVE CARBON PICKUP In Foundry Iron



By Eugene Fry

Metallurgist  
Acme Foundry & Machine Co.  
Coffeyville, Kan.

- ♦ Higher carbon pickup in foundry iron with half the fuel is claimed possible with a new high-carbon coke . . . It permits use of more low grade scrap, less pig iron in the cupola.
- ♦ Lower bed heights and smaller coke splits permit faster melting . . . Shorter melting cycles cut cupola refractory maintenance.
- ♦ Chief disadvantage is the need for extra fluxing of limestone . . . Almost twice the usual amount of flux is required to fully utilize maximum carbon pickup during faster melting.

♦ A NEW HIGH-CARBON COKE makes possible greater carbon assimilation in foundry iron and permits use of more low-cost scrap and less pig iron per cupola charge. The new coke, developed by a Midwestern manufacturer, permits cuts in coke ratios by as much as 50 pct by weight. The new coke may well prove to be an important step forward in the continuing development of improved foundry fuels.

Despite the many improvements in foundry cokes, metallurgists have been continually called upon to produce iron to more exacting specifications and have found present day coke inadequate in many respects.

New shortages of pig iron and high grade scrap have developed since World War II. With inferior materials being charged into the cupola, industry has struggled to keep metal at the spout on a par or better than metal produced when choice raw materials were available.

Higher carbon pickup has been obtained through excessive use of coke bed weights and

enormous splits between metal charges. But for the results obtained, costs mounted. By the use of heavy coke additions, extra tonnage of coke was consumed. Additional labor costs were involved in handling coke from storage bin to cupola. Extra manhours were spent in the melting and pouroff departments since the momentum of melt slows when more coke is used.

Another costly item was cupola maintenance. Refractory linings were unable to withstand the slow melting process, and resulting cupola repairs raised total expenses in getting more carbon absorption.

Many foundrymen, due to high costs in obtaining high coke ratios, tried "carbon-raising" ladle additions but found this method did not raise total carbon.

Deciding that to raise total carbon, the ingredients had to be placed in the cupola itself, foundrymen tried several forms of briquetted graphites. Results were mostly good, in so far as analysis was concerned. High freight rates,

however, made constant use of this material costly.

To meet these problems coke manufacturers sought a coke superior in carbon absorption qualities. Now, production of a high-carbon coke by one Midwestern coke manufacturer appears to be a step toward the goal of greater carbon pickup.

This coke is about the same size and looks the same as ordinary byproduct coke. Here the likeness ends. After extensive test runs in various foundries of high-carbon coke users have noted the following advantages:

1. Even when coke ratios were cut as much as 50 pct by weight over former usage, total carbon increase was experienced from 3.40 (former) to 3.50 (current).

2. By using less fuel, savings were achieved in materials handling costs.

3. Lower bed heights and smaller coke splits permitted much faster melting—without injury to metal quality. Further, manhours were saved in melting and pouroff shifts.

4. High temperatures were easily attained and maintained throughout the heat.

5. Ability of this coke to induce more carbon assimilation, permitted use of a higher percentage of low cost steel scrap and less pig iron per charge and still obtain a very fluid metal. The product yielded higher tensile readings without impairing machining operations.

6. Refractory maintenance in the cupola was reduced, in some cases as much as 75 pct of normal, due to the shortened elapsed melting cycle.

High-carbon coke is still in the pioneering

stage as far as distribution is concerned. The manufacturers are not yet able to bake sufficient quantities for wide consumption. The current price per delivered ton is about double that of ordinary coke. Offsetting higher cost, only about one half the amount is needed to do a similar or better job than regular coke. Improvements in production techniques are expected to permit capacity processing in the near future.

Metal made with this coke can be successfully cast in a great variety of designs, with various metal sections and sensitive cross ribs. Castings weighing from a few ounces to several tons have been poured successfully. In machining and in service these castings appear to compare favorably if not better than low-carbon coke castings.

#### Extra limestone flux needed

Chief disadvantage is the need for extra fluxing of limestone per charge. Almost twice the usual amount of flux is required to fully utilize maximum carbon pickup during the faster melting obtained with high-carbon coke.

Each foundry cupola is different and experimental runs with this new type coke have posed some unique problems. Before charting exact ratios of coke to be used at each installation, a variety of dimensional and operating data must be compiled.

On the basis of high-carbon coke, cupola irons of the future may attain greater range of economical, diversified usage, despite intermittent shortages of materials.

## Vacuum Melting Furnace Has Unusual Design Features

♦ GROWING INTEREST in vacuum melting techniques has brought increased demands from industry for more flexible vacuum melting furnaces. A new unit recently developed in Europe combines several unusual features. A storage chamber built into the head of the vacuum container makes provision for addition of materials during the melting operation. Six compartments in the chamber are loaded with extra material before the equipment is evacuated. By means of a handwheel, these compartments can be turned to unload materials to the crucible as needed.

A quartz glass viewing window permits the operator to observe the addition of materials as well as the melting and pouring operations. Crucibles may be either ready-made or fired in the coil by using a graphite core.



CRUCIBLE CAN BE TILTED by operator for pouring into mold. Equipment is made by Geratetechnik-Anstalt Baisers of the Principality of Lichtenstein.



# MICROFILMING

## Can Cut Record Storage Costs



By W. G. Patton  
Asst. Technical Editor

♦ You can save money, "push out" plant walls by cutting storage areas, save valuable office time by microfilming industry records . . . Vickers, Inc., cut the storage area for 23 years' checks from 18.5 cu ft to 0.0032 cu ft.

♦ Microfilming adds an extra margin of safety in storage of records . . . They can easily be moved in case of disaster . . . Cost of microfilming varies with preparation needed . . . Microfilming machines run at high speeds, have safety features built in.

♦ THERE IS PROOF for the statement that use of microfilm instead of paper storage will save as much as 99.5 pct of required floor space. Vickers, Inc., of Detroit, makers of pumps and fluid controls, recently microfilmed general checks covering a 23-year period. The originals took up 18.5 cu ft of storage space. On microfilm, the checks were squeezed down to 0.0032 cu ft.

Such savings in storage space pay off. Part, and in some cases all, the cost of microfilming can be met with savings in storage costs.

Potential savings from microfilm go beyond mere storage. Ability to find things quickly without rummaging through dusty files is an important advantage. Ability to protect documents for indefinite periods against all imaginable calamity should be highly valued—it is priceless under some conditions.

Fast reproduceability of file material at low cost is another advantage. Microfilming may mean the difference between staying where you are and getting additional space.

Vickers has been microfilming drawings, change notices, etc. since early 1950. This type material requires equipment of high resolving power to provide utmost clarity for photo-copying. A bed-type machine equipped with a still camera is used. Sheets larger than 36 in. square can be filmed in sections with suitable overlap. Large books are also handled by this bed-type machine using a book cradle attachment. Reduction may be varied from 12:1 to 30:1, but is always run at the lowest figure that insures clarity.

During March 1951, the Vickers management set up a committee to organize a permanent program for retention or destruction of all com-

pany records. The committee was also asked to provide adequate emergency protection for the company's records against serious fire, sabotage or atomic bombing.

First step was a complete analysis of records. The analysis was completed in 6 months.

Each department made its own survey and was requested to classify its records as follows:

(A) Basic documents or records such as drawings and patents whose loss would seriously hamper continuation of the business.

(B) Evidence of transactions. These documents describe purchase, production, sale or disposal of materials, supplies, equipment etc. and support the basic summary record of these transactions.

(C) Records used in support of evidence. These documents are necessary to or helpful in the processing or recording of transactions, but are not necessary to establish that the transaction occurred.

(D) Informal or internal control documents



MICROFILM EQUIPMENT used by Vickers permits reproduction of continuous strips up to 11 in. wide.

used to supply current information only. Examples include move orders and maintenance repair orders.

A committee on procedures summarized the reports received from the department heads. These reports were then passed to a review committee. The review committee then published a Records Retention Schedule, showing authorized periods of retention, method of storage, for both regular and emergency protection, for all material held longer than a year.

A written order authorizes the custodian of documents to (1) microfilm and dispose or return the records, (2) transfer to long term storage, (3) destroy the records.

Blanket authorizations to microfilm material cover a period of a year or longer. The authorization also indicates the time of year when microfilming should be performed.

### Proper preparation important

Written orders also authorize transfer to long term storage. A standard procedure for identification, labeling etc. is followed. Department heads are responsible for the destruction of all of their own records and documents, including material retained less than a year.

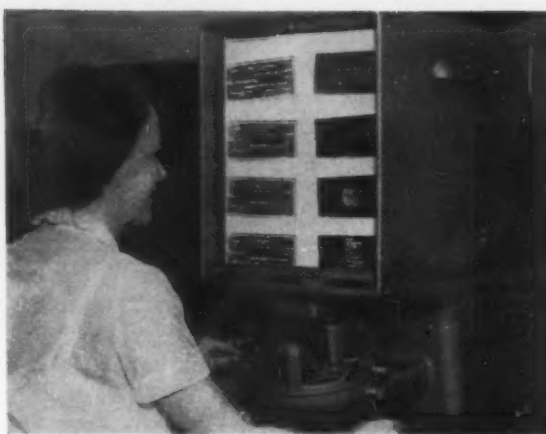
Documents selected for microfilming are divided into two groups, those requiring photocopying and those requiring only viewing (reading), or not needing precise delineation should they be reproduced from the film. Documents in the first group, as well as records too large to go through a faster, rotary microfilming machine are reproduced on the bed-type equipment.

Material must be properly prepared for microfilming. Checks require little preparation because, unlike other documents, they are usually in good order. The following insertions are necessary: starting cards, Certificate of Intent and Purpose, including document identification, Reel Identification, Authenticity Certificate. Minor indexes or index separators may be required.

### Has automatic, hand feeds

Burroughs microfilming equipment is used for all material in the second group. This equipment can handle documents and records up 11 in. wide. The equipment has both high speed automatic and hand feeding and uses two 8 mm half widths of 16-mm film. Adequate safeguards against misoperation, flexibility in materials to be filmed, protection against double feed of material are built in. Interchangeable movie cameras which synchronize with the feed are used for each reduction ratio. Equipment can be easily moved from one room to another.

The number of documents that can be photographed per 100 ft roll of 16-mm film using reductions of 18 to 1, 30 to 1 or 37 to 1 varies with the size of the document. Based on a docu-



**VIEWING EQUIPMENT** is compact and flexible. Facsimile prints can be exposed in the viewer. Focus is automatic.

ment 10½ in. wide and 3 in. from top to bottom, at 18 to 1 reduction, 5300 shots could be taken. On 8-mm film, at a 37 to 1 reduction, 22,000 shots could be made. Small documents, such as cards, can be photographed simultaneously on both sides at rates as high as 450 frames per min.

In deciding what photographic reduction to use, it is necessary to take into account (1) legibility required, (2) most efficient use of film, (3) age and condition of the document. Documents that have started to disintegrate are usually photographed at 18 to 1 reduction.

Blue and salmon colored documents require relatively long exposure. Light pink and yellow approach black on white in their ability to be reproduced. The Burroughs recorder has built-in color control which compensates for larger exposure.

### Blanks speed location

It is general practice at Vickers to insert a blank space as a visual index every 25 or every 100 frames depending on the type of document. This helps the viewer locate a specific document by counting white flashes as the reel is scanned at high speed.

Three patterns may be employed to obtain maximum film economy. Fronts and backs may be photographed simultaneously side by side at a reduction ratio of 37 to 1 or 30 to 1. A second pattern uses a reduction ratio of 18 to 1 on 16 mm. This is for larger images and maximum ease of reading. A third pattern uses only half the 16-mm film. When the end of the film is reached, the film is reversed and the other half is used.

If the camera is not loaded properly an alarm rings; if the camera is mounted improperly, it won't operate. If two documents are shoved through at once, the machine stops to permit immediate correction. An indicator tells how many documents have been photographed. A

buzzer sounds when the operator approaches the end of the film. Visual indicators show a lamp failure, count the number of frames taken and show the exposure cycle that is being used.

Viewing equipment is compact and easily moved. Lighting can be modified to provide desired contrast. The film turret rotates 360°. Facsimile prints can be exposed in the viewer with automatic focus. Film speed is adjustable by the operator. Either hand or foot control may be used. The control is equally satisfactory for scanning or reading.

All boxes of film are carefully labeled, showing each progressive step. Additions to the film as well as important omissions from the file are included on the label. Careful control is exercised in transmitting and returning the film from Burroughs which processes the film. A major index is kept for each document microfilmed.

The Vickers microfilm program has now been operating for about two years. Microfilms are made of all general checks, pay checks, employee rate and earnings records, parts lists, change notices, tool design and engineering drawings, and sales orders. Records such as accounts receivable and payable, purchase orders, vouchers, and miscellaneous correspondence not related to contracts or sales orders are not microfilmed.

Microfilm has been accepted by many courts as legal evidence in establishing the existence of an original document and for showing reasons for loss.

One of the strongest arguments for the use

of microfilm today is to provide permanent security for irreplaceable company records. At Vickers, up-to-date microfilm records of employee records, accounts receivable, payrolls, sales and purchasing records etc. are being kept in a vault outside of Detroit. These records would be available immediately and at no further cost to the company in the event of some unforeseen catastrophe. Storage conditions to protect the microfilm were recommended by the National Bureau of Standards letter on micro-filming.

Published estimates indicate that if storage space costs \$1 per sq ft per year, microfilm records will pay for themselves in about 10 years. (Some estimates place the equalizing cost as low as 50¢ per sq ft.) At \$1.50 per sq ft per year, microfilm will pay for itself in 7½ years. At \$2 per sq ft, the break-even point between storage and microfilm is only 5 years. However, because of all the intangible factors involved—plus the necessity of assuring continuity of the business—cost evaluations must take into account many factors that are not easily measured.

Cost of film at Detroit, including processing, is \$3.50 for 16 mm and \$7.00 for 35 mm per roll of 100 ft. The cost of a microfilm photographing machine, viewer and storage cabinet starts at about \$3600. The investment required will depend, of course, on the equipment considered necessary to provide adequate service. Microfilm equipment can be depreciated over a period of 16 years. On a 16-year basis, the basic equipment cost is \$18.70 per month.



GENERAL CHECKS for Vickers, Inc. occupied 10.5 ft of storage space prior to microfilming. The microfilm boxes

of the same checks, arrow at left, occupied 0.0032 cu ft. Faster handling gives additional savings.



## ECONOMICAL WATERAIL DELIVERY

from

*Newport Steel*



Beyond the quality of steel itself, important factors in every customer's requirements are good service and prompt delivery. Newport stands high on every count. Situated in the great Cincinnati rail hub and on the Mississippi-Ohio River system, our plants have access to seven major railroads and extensive river barge

routes. The result is economical delivery to America's fastest growing industrial area, the Middle West and South. Strategic location, an uninterrupted record of 68 years of fine steelmaking, a continuing program of modernization and integration, all combine to make Newport your logical source of better steel.

### PRODUCTS OF NEWPORT STEEL

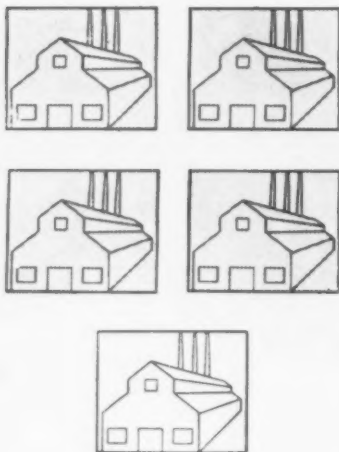
- Hot-Rolled Steel in Coil
- Hot-Rolled Pickled Steel in Coil
- Electric Weld Line Pipe
- Hot-Rolled Sheets
- Galvanized Sheets
- Galvannealed Sheets
- Colorbond Sheets
- Hot-Rolled Pickled Sheets
- Electrical Sheets
- Alloy Sheets
- Roofing and Siding
- Eave Trough and Conductor Pipe
- Culverts

*Newport Steel*

CORPORATION

NEWPORT, KENTUCKY

# 4 out of 5



Since 1946, five major press plants have been built for the automotive industry to meet the increased demand for passenger cars and trucks.

Commercial Contracting Corporation was selected to install all machinery and equipment in four of these five plants.

Currently, CCC crews are beginning to place the first shipments of more than 1,000 pieces of equipment to be housed in the sixth such huge press plant constructed in the United States since the War's end.

Erecting heavy presses and other machinery is an important part of our business.

Other CCC services, provided individually or under one PACKAGE contract, include: General Construction, Building Alterations, Demolition, Foundations, Machinery Moving, Crane and Conveyor Installing, and Steel Fabricating.

COMMERCIAL  
CONTRACTING  
CORPORATION

GENERAL CONTRACTORS

12160 Cloverdale • Detroit 4

## Technical Briefs

Engineering

### PRODUCTION CONTROL:

Use of electronic gadgets will boost production, cut costs.

Electronic production control will reduce costs most in certain plants by increasing the output of product, using the same productive facilities. To a lesser extent it will reduce overhead by replacing clerical employees, Richard C. Canning of the University of California told members of The American Society of Mechanical Engineers at their recent semi-annual meeting in Los Angeles.

Although a master scheduling computer has not yet been designed, electronic computer development has reached a state where it is feasible to plan on a machine that will assemble data, translate the work schedule into specific shop instructions, and measure and feed back the actual rate of progress for the next scheduling computation.

#### Job Shops Note

A data system might well pay for itself in a short time by means of savings in clerical salaries, and thus pave the way for the introduction of a master scheduling computer at a later time. Mr. Canning recommended such a system for plants using the job shop operation, where a large variety of products is possible, and production is to customer order rather than to finished goods inventory.

Study of a number of firms showed that job shop plants with less than 500 employees probably could not justify the purchase of an electronic production control system. Certain plants with over 1000 employees almost certainly should consider the purchase of such a system.

#### Stores Up Information

In the small, continuous line plant there is little choice as to which job will be worked on next.

In the large job shop there are a number of jobs waiting to be worked on in any department, and

### IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 101. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

the foreman must choose which sequence to use.

For example, a plant which fabricates component parts and does all assembly, which means that it has loading and scheduling problems, could facilitate output and reduce costs with electronic production control.

For receiving and processing orders the machine replaces clerks for writing, computing, sorting, and selecting. In addition it stores pertinent information, such as the progress of shop orders.

#### Improved Scheduling

When it comes to scheduling problems the machine has distinct advantages. If the coordination of several shop orders is involved and they must all arrive at the assembly department at the same time, the situation is often too complicated to be accurately solved



GROUND CREW warms up motor of this helicopter ambulance of the type used for evacuation of wounded personnel in Korea. Hot air is blown through flexible tubing onto motor. Coating material on tubing resists temperatures several hundred degrees above zero, stays flexible at minus 65°F.

mentally because of all the interactions.

The scheduling machine, with all pertinent data stored with it, assigns shop-orders to machine tools in just the same decision-making manner as is done in the shop—only on a much faster time scale. The machine is then able to logically deduce what is most likely to be happening in the shop for each hour during the next few weeks. With these results the production controller can avoid future bottlenecks by changing priorities, moving some jobs faster, overtime work, and sub-contracting certain jobs.

#### Anticipates Bottlenecks

In 15 minutes the machine can run off a schedule of the next 40 hours' shop time. The machine lets him see, in advance, the consequences of several alternative decisions so that he can make the best one. At the plant used for this study it was estimated that the functions of 14 of the 29 people now in production control could be handled electronically.

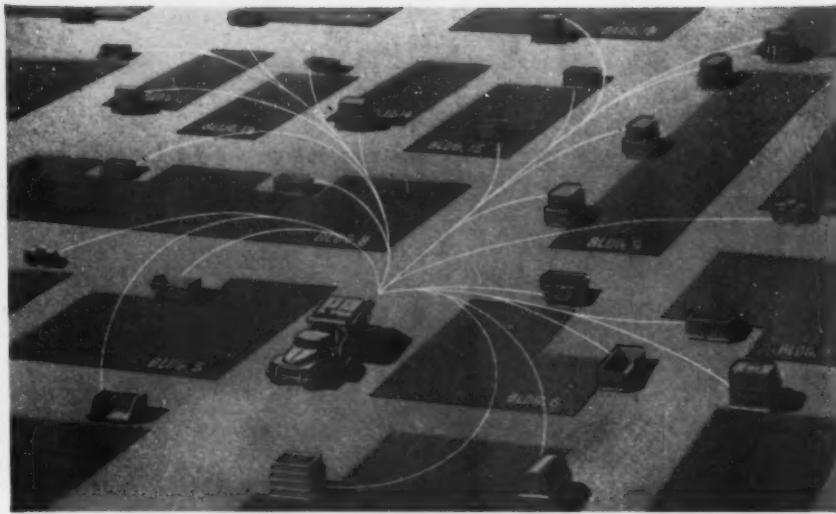
The direct saving from salaries and overhead would amount to some \$175,000 in 2½ years. Since the company's output in this period would probably be around \$12,000,000, even a 3 pct increase in output, from reduction of bottlenecks and more optimum scheduling and loading, would mean a saving of about \$360,000—almost twice the clerical savings. The estimated cost of electronic equipment would be between \$250,000 and \$300,000 as compared with a total \$535,000 savings in 2½ years.

#### Shock Front Effects Studied

Shock waves, similar to those produced by an atomic explosion, are created in miniature in a new "shock tube" recently constructed by General Electric jet engine engineers at Evendale, Ohio, to study combustion processes.

The shock fronts, which travel faster than the speed of sound, are photographed and studied to determine the effects of such waves.

Turn Page



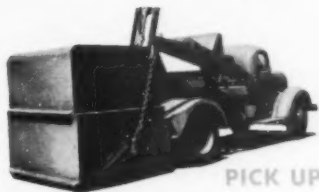
## What you can do about your high cost of bulk Materials Handling

The picture above tells the whole story of the Dempster-Dumpster System of Bulk Materials Handling. Never before have you been able to cut bulk materials handling costs so drastically! One truck-mounted Dempster-Dumpster handles the entire group of Demp-

ster-Dumpster Detachable Containers. It's like having scores of truck bodies for a single truck.

Containers are spotted at convenient materials accumulation points. When loaded each is picked up, hauled and emptied (as shown at left) . . . or load set down intact. Entire operation is handled by only one man, the driver, by hydraulic controls in cab.

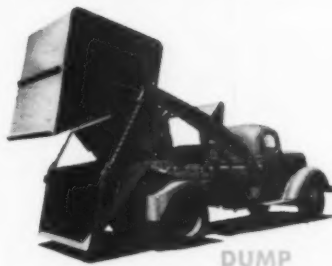
Each container is designed and built in the desired size up to 12 cu. yds. to suit the materials to be handled—be they solids, liquids or dust . . . hot or cold . . . bulky, light or heavy. You can handle, at tremendous savings, materials of many descriptions—trash and waste materials, raw materials, finished products, etc.—with only one truck and only one man, the driver. Write to us for complete facts. Manufactured exclusively by Dempster Brothers, Inc.



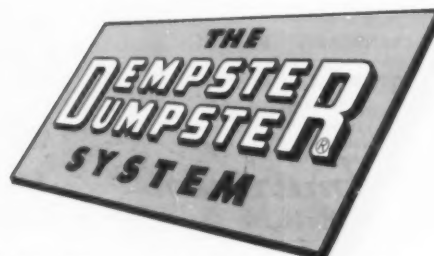
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Designed for Primary Reduction of

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Built for the really BIG jobs, the American "60-50" operates on the American-Originated Rolling Shredder Ring crushing principle . . . contains all the other performance features that have made American Metal Turnings Crushers the time-tested favorites throughout industry.

American manufactures 5 other models of Metal Turnings Crushers with capacities from 1 to 10 TPH.

Write for new "60-50" Bulletin.

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### — Technical Briefs —

#### TAPE RECORDER:

Ten hours of flight data can be taped on 18-lb unit.

A compact fire and crash proof airborne tape recorder designed to log everything that happens during an airplane or missile flight has been developed by North American Aviation, Inc., Downey, Calif.

Using miniature electronic parts, the small recorder was originally designed to "go along for the ride" on U. S. Air Force guided missiles to report on altitude, speed, and general conduct of the vehicle in flight.

#### Runs 10 Hr Nonstop

Carried by commercial, military, or private airplanes, the airborne tape can record 10 hr of important flight information. The tape can be run for another 10 hr nonstop with the previous information being "wiped off" as the new information is recorded. Over 500 hr running time can be racked up on the recorder before it needs a service check.

#### Has Crash-proof Case

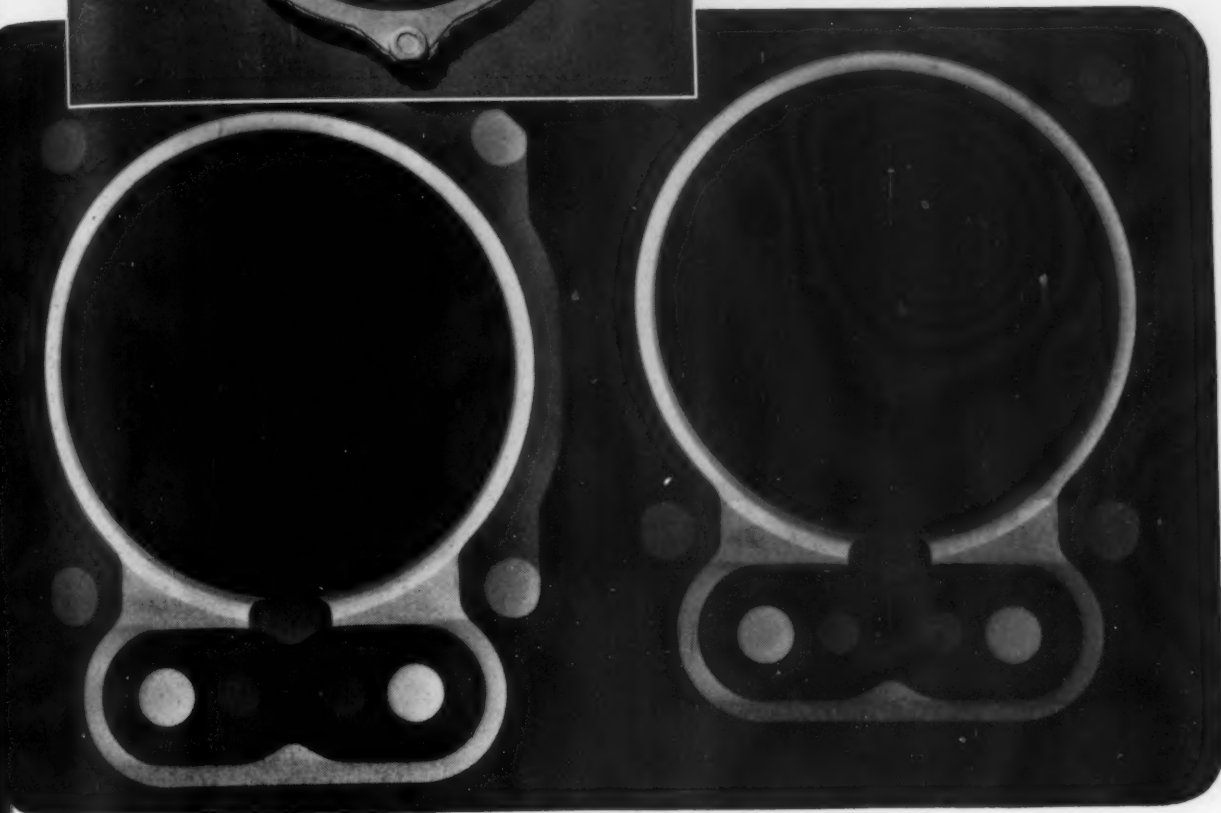
Locked in a sealed, crash-proof case, a 1200 ft magnetic tape carries the log of a complete trip, including conversation in the cockpit, communications from the ground, data on pressure, altitude, time elapse, acceleration and speed.



TAPE RECORDER has compact, crash-proof case. The 18-lb unit can record 10 hr of flight data.

Turn to Page 150

Sound?



## Radiography removes the doubt

With the plane headed home and landmarks all "zeroed-in," the soundness of this casting becomes vitally important. For it is part of an aircraft instrument which must be accurate without fail.

That is why each of these castings is subjected to the searching eye of radiography. It is the way to be sure no hidden flaw, no gas holes or porosities exist.

Proving soundness with x-rays has become common practice with more and more suppliers of

quality castings. They have found it helps build an enviable reputation for delivering only good work. And besides, by radiographing pilot castings, changes in procedures are frequently indicated which increase the yield in long runs.

If you'd like details on how radiography can improve your operations, get in touch with your x-ray dealer. Or, if you like, write us for a free copy of "Radiography as a Foundry Tool."

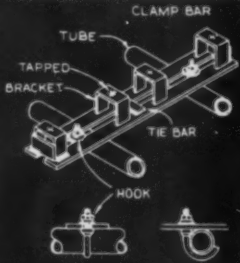
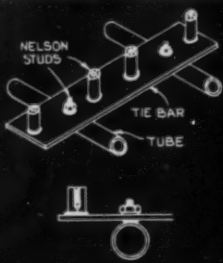
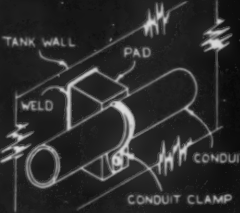
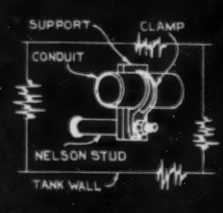
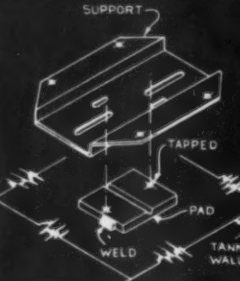
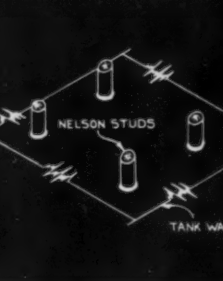
**EASTMAN KODAK COMPANY**  
**X-ray Division, Rochester 4, N. Y.**

### Radiography...

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TRADE-MARK

# 71% to 86% Savings by redesigning with NELWELD\*

FORMER METHOD	NELWELD METHOD	RESULT
		75% SAVING with NELWELD
		86% SAVING with NELWELD
		71% SAVING with NELWELD



These substantial savings in fabrication costs were obtained when an electrical equipment manufacturer took advantage of the NELWELD method of fastening to redesign component parts. If you are now drilling/tapping or hand welding, chances are you too can . . .

## Cut fastening costs, gain important corollary benefits—with NELWELD

In addition to slashing direct fastening costs, NELWELD pays off with such important corollary advantages as: reduction in costly material handling . . . saving in steel by eliminating bosses, flanges, brackets . . . a saving in manhours required to assemble . . . increased production.

If you're ready to cut your costs, start by writing for the booklet, "How to Design for NELWELD."

\*Trademark

Fasten it Better...at Less Cost, with

# NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO



## Technical Briefs

### WELDING:

Studies show effects of alloys in titanium welds.

Bend ductility of welded joints in the titanium alloys with lowest alloy content are relatively good. G. E. Faulkner, G. B. Grable and C. B. Voldrich reported recently at the Houston, Texas, meeting of the American Welding Society.

Bend ductility decreased rapidly with increasing alloy content and became low when 3 to 6 pct alloy content was reached, they found in their study, "The Effect of Iron, Manganese, Chromium, and Molybdenum on Welds in Titanium."

### Used to Add Strength

Iron, manganese, chromium, and molybdenum are the principal beta-stabilizing elements used as strengtheners in commercial titanium alloys. The effects of these elements on the mechanical and metallurgical properties of welded joints in titanium were studied in four series of experimental binary alloys prepared in compositions designed to cover the range where most of the useful alloys are expected to fall.

### Improves Bend Ductility

Inert-gas-shielded tungsten arc-welded joints were made in 1/8, 1/4, and 1/2-in.-thick plates of the experimental alloys. These welded joints were studied for tensile, bend, and notch-toughness properties, hardness and microstructures.

Postweld heat treatment could be used to improve the bend ductility of most of the welded joints in alloys with up to 6 pct alloy content. With one exception, welded joints in plates containing over 6 pct alloy content had low bend ductility in both the as-welded and heat-treated conditions.

### Ductility v. Notch Toughness

Exception was the 13 pct chromium metastable-beta alloy which had excellent bend ductility in the as-welded condition. The trend in the notch toughness properties of the welded joints with increasing alloy content was similar to the



trend observed in the bend properties.

Welded joints which had fair bend ductility generally had relatively good notch toughness, and those which had low bend ductility generally had low notch toughness.

#### Correlation Noted

Transformation hardening of the weld metals and heat affected zones appeared to be correlated with bend ductility and notch toughness in alloys with up to 6 pct alloy content.

Results indicate that mechanisms such as freezing segregation, cast structure, and contamination may have embrittled the welded joints in the higher alloys. Freezing segregation was observed in the weld metals of most of the metastable beta alloys.

#### PRESS WORK:

**Magnetic separator speeds press feeding of embossed sheets.**

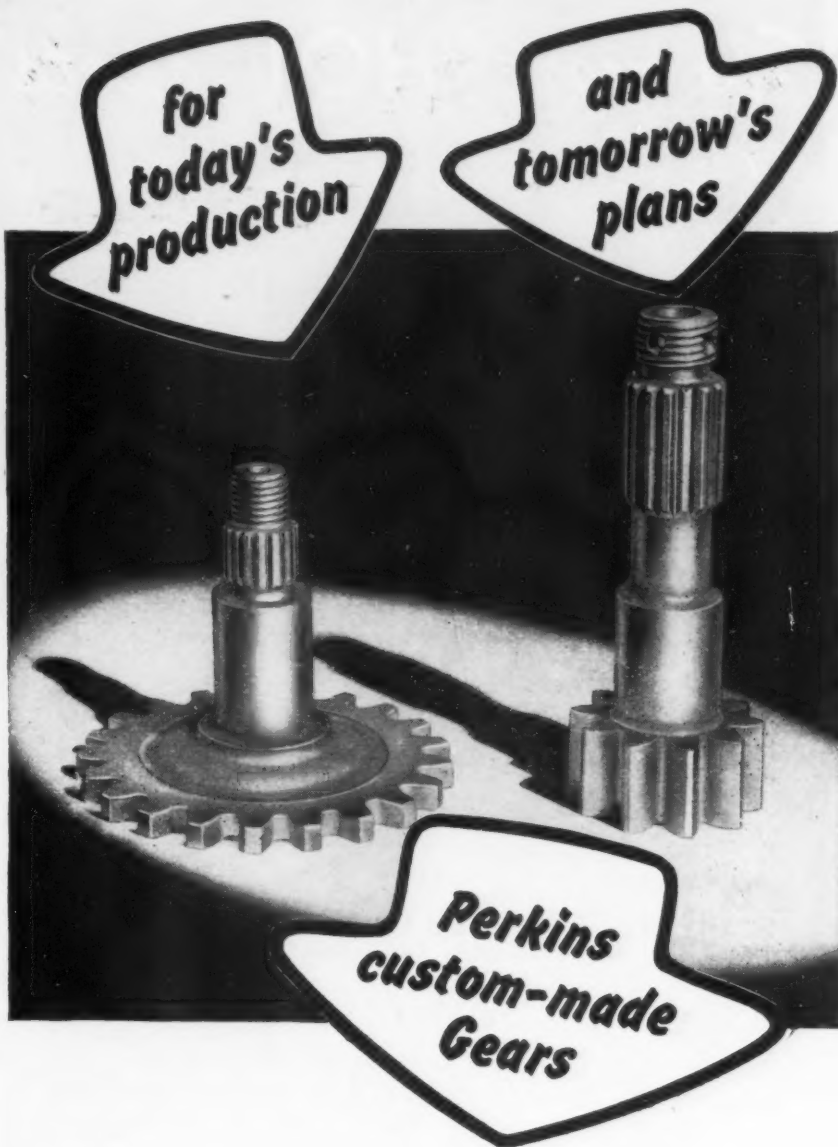
Difficulty in separating embossed metal sheets for hand press feeding at the Electrolux Corp. plant, Old Greenwich, Conn., has been solved through use of a magnetic separator.

Use of the magnetic separator, made by Basco Mfg. Co., Stamford,



EMBOSSED SHEETS used on vacuum cleaner are spread apart for feeding by magnetic separator. Elimination of slow hand separation has improved press production.

Turn Page



**G**EAR DESIGN and manufacture in general, are ancient arts, but for the requirements of modern machines the scope of analysis, detail design, and test techniques have had to be extended far beyond the considerations acceptable only a relatively short time ago. For example, results obtained by the aircraft industry have revealed greater possibilities for the application of high power gearing.

The high speeds involved in these types of gear drives, however, create particularly strict requirements for accuracy and uniformity of the gears. And this is the very reason why before,

during and since the war, the production of aircraft gears has been our number one job! But regardless of application — from aircraft to washing machines — if your product calls for trouble-free power transmission, it calls for PERKINS custom-made GEARS.

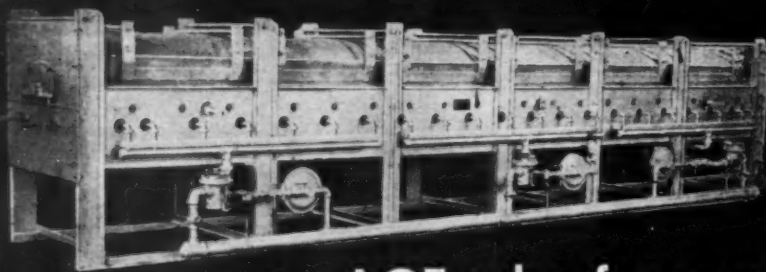
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to customers' specifications, in all materials, metallic and non-metallic: bevel gears, ratchets, sprockets, ground thread worms, spiral gears, helical gears, spur gears with shaved or ground teeth.

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the AGF tube furnace  
model NO. 72

The Reduction of Oxides is very efficiently accomplished in this furnace because of the large number of small burners scientifically positioned to direct a uniform heat along the entire operating length of each tube. This prevents "hot spots" and provides longer tube life.

**Other advantages are—**

- RIGID ATMOSPHERE CONTROLS
- UNIFORM HEATING OF TUBES
- REMOVABLE ROOF TO FACILITATE ACCESS TO INTERIOR CHAMBER

**Specifications—**

Chamber length—20 ft., Capacity 6 tubes 2 1/2" I.D.

Entrance is reg. 2" high, max. 4" x 20" wide.

Max. air—85 C.F.M. at 16 oz.

Max. Cons.—(525 B.T.U. Gas)—1000 C.F.H.

For the manufacture of metallic tungsten, molybdenum, etc., long tube furnaces are generally used having one or more tubes through which "boats" are pushed, containing the material to be reduced. Similar types of AGF furnaces are used for the hardening and annealing of steel or brass wire and wire strip.



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### —Technical Briefs—

Conn., has eliminated slow hand separating and permitted higher press production. Now, all the operator has to do is pick up a quantity of sheets and place them against the separator. The magnetic unit automatically fans out each sheet making it a simple matter to pick up one at a time.

A separating unit comprises a permanent magnet that induces a magnetic field in the stacked steel sheets. The sheets tend to repel each other and the ends fan out with air space between.

### COMMUNICATIONS:

#### Two-way system speeds movement of materials

Movement of materials can be speeded by cutting down on idle time expended in getting instructions. This has proved to be the case in plant warehousing operations where two-way radio has substantially boosted the "work" done per man-lift truck unit.

Similar "production" boosts are now possible with an unusual two-way voice communication system which links base stations such as cranes, ore bridges, yard locomotives and boat unloaders.

#### Noise-Free System

The communication system, developed by Mine Safety Appliances Co., Pittsburgh, helps co-



STEELPLANT FOREMAN uses Telecrane communication system to direct crane operator handling ingots at the soaking pit. System eliminates hand signals, reduces errors and delays.

ordinate operations, speeding production, promoting safety, and reducing delays in materials handling.

Clear, direct voice communication, audible above the noise level of plant operations, is achieved with this heavy-duty frequency-modulated "Telecrane" system, they add. It is free from transmission noise and interference.

#### Uses Electrical Circuits

The system uses existing electrical circuits for transmitting carrier waves. A coupling capacitor joins the carrier frequency to any ac or dc power line. For isolated locations, circuits which operate on storage batteries are available.

The compact transmitter-receiver unit is tray-mounted to facilitate servicing. The extension microphone, used in cranes and mobile equipment, adjustable for position, has a heavy-duty foot switch to key the transmitter or close the speaker circuit. This leaves the operator's hands free.

#### HEAT TREATING:

**Quicker, more accurate control in martempering, austempering.**

The possibility of more accurate production control in martempering and austempering operations have been suggested through use of an apparatus based on the volume change which takes place in transformation of austenite.

Known as the Schaaber Dilatometer, the apparatus was developed in Germany. Use of the instrument has been studied by Ajax Electric Co., Inc., Philadelphia.

#### Use of TTT Curves

The metallurgist usually relies on the time-temperature-transformation diagrams when available. However, these data are not always applicable or reliable for the steel being hardened by martempering or austempering.

Even for similar heats of steel,

**Turn Page**

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JOHNSON BRONZE offers you a complete service on electric motor bearings. The Catalog illustrates and lists these bearings by manufacturers' numbers, motor type, frame or model number, and complete size data, as well as the Johnson part number. Be sure you have the latest catalog for reference and ordering from your local distributor.

Johnson EM Bearings are correct in design and tolerance, and made of an alloy that will meet toughest operating conditions. They slip right into position without additional work. For satisfactory results, use Johnson EM Bearings.

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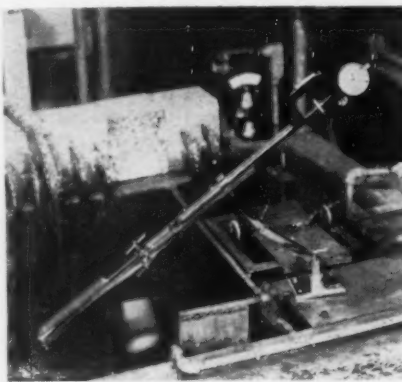
## Technical Briefs

these TTT curves are not precise due to the variations from heat to heat in chemistry, grain size, austenitizing temperatures, mass or anisothermal cooling conditions.

### Evasive Problem

The difficulty of measuring complete transformation is the evasive problem confronting production control. The common method to determine the extent of an isothermal transformation is to hold the steel specimen at the transformation temperature for various periods of time, and then quench in water.

Any change in hardness serves as a clue to the completion of transformation. However, this method fails to determine accurately the end of bainitic transformation in the case of an austempering treatment. Hardness alone lacks the sensitivity to indicate the last trace of retained austenite, which should be held



**FASTER AND MORE ACCURATE** production control in martempering and austempering operations have been suggested as possible with the Dilatometer.

to a minimum if the maximum physical properties are to be attained.

With the greatly expanding use of martempering and austempering in heat treating, the Schaaber Dilatometer offers the possibility of more accurate and quicker determinations of (1) transformation time for austempering; (2) martempering time cycles.

## "DC" Wrought Iron Sling Chains

**LONG LIFE...  
PROVEN SAFETY!**

Each length of "DC" Wrought Iron Sling Chain is proof-tested, every link carefully inspected. "DC" Sling Chains give long, heavy-duty service, won't suddenly snap when overloaded—slow stretching gives warning. Available in single lengths or multiple branches with slip or grab hooks, round or pear-shaped attachments. Chain sizes range from  $\frac{3}{8}$ " to 2". Ideal for hoisting and loading in mills, factories, foundries and other industries. Quality meets all association and government standards.

Send your specifications and inquiries to:

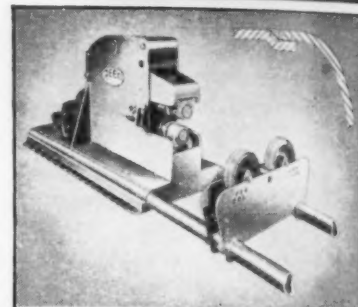


**Carroll Chain Company**  
380 West Spring St., Columbus, Ohio



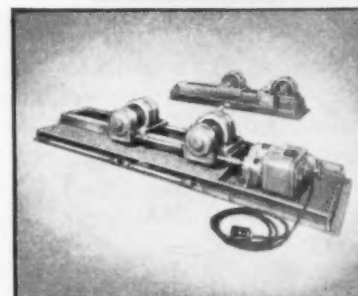
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- TURNING ROLLS
- AUTOMATIC WELDING FIXTURES



#### REED OFFSET FORMING MACHINE

- ★ Improves automatic welding production by eliminating chill-rings and backing bars
- ★ Forms offset weld-backing joggle from tank shell
- ★ Loosens rust and mill scale
- ★ Improves shell roundness
- ★ Two models: M-2—1/16 to 3/16" plate  
M-4—3/16 to 7/16" plate



#### REED PORTABLE TURNING ROLLS

- ★ In 5 models; capacities: up to 75 tons
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## Steel Rate's Slide Does Not Mean Failing Demand

**Ingot rate is 95 pct of capacity . . . But mills have plenty of orders on the books . . . Demand still strong if price is right . . . Scrap price explodes to new high for year.**

Don't be fooled by the decline in steel production the past few weeks; consumers are still anxious to buy more than can be delivered at regular mill prices.

**Here's Why . . .** Here are the main reasons the steel market, though easing, is still a long way from saturation:

Steel scrap prices this week exploded to a new high for the year. THE IRON AGE Steel Scrap Composite Price rose \$1 a ton to \$44.83 per gross ton. This is the eighth consecutive week this price index has advanced. Steel scrap prices usually reflect market prospects of the mills.

Major steel consuming industries are still going great guns. Their purchasing agents will buy if the price is right. But none of them want to be "stuck" with high cost material that will make them look bad when the market turns softer.

**Order Books Filling . . .** This is bad news to converters, brokers, and importers of foreign steel. And it means that quality must be kept up to snuff. But it doesn't mean that demand has lost its zip.

There's still plenty of business on mill books. Order backlogs are not appreciably smaller than they were several months ago. Fourth quarter books just opened are filling at a "highly satisfactory" pace.

Carryovers of (promised but undelivered) orders from third to fourth quarters are just about certain in sheets, both hot and cold-rolled, bars, and light plates.

**Cut High Prices . . .** Steel is still being sold at premium prices by

high cost producers. Consumers will not pay premiums when material becomes abundant at regular prices. Premium producers know this, and they'll price their products competitively when order books grow thin.

Cancelled tonnages that have become available have been quickly gobbled up by other customers. Cancellations are nowhere near epidemic proportions. They seem to result more from over-ordering and revisions in defense programs than from any failing in demand.

**Optimistic Officials . . .** In the past several years the "experts" have repeatedly underestimated demand for steel. This time even steel officials, who are noted for their conservatism in estimating markets, are not predicting an early decline in demand. Why? They can look at their order books, they are within telephone reach of purchasing agents, they have just raised prices without much squawk from customers, and they do have to buy scrap.

Below-capacity operations undoubtedly partly reflect some easing of extreme pressure on the mills, but not lack of business.

Lower rates are directly attributed to (1) vacations, (2) maintenance, and (3) hot weather. By all-out efforts mills could raise output a few points higher, but cost of producing the additional tonnage would be great.

**Too Costly . . .** The long period of sustained production has no parallel in the history of the industry. Maintenance that used to take days has been done in hours, and in extreme cases with hardly a production halt. In sustaining

high production some equipment has been tortured beyond what it was built to take. Some that will be dismantled when demand lags is still being operated. Steel people are as cost conscious as many other manufacturers, and the price of operating at capacity is at present too high.

**Will Rise Again . . .** The ingot rate may "limp" along in the mid-nineties for the rest of this month. But even when operating at "only" 96 pct of rated capacity (the estimated rate this week) the industry is producing at an annual rate of close to 112 million tons. Best year on record is the 105.2 million tons poured in 1951. Last year's output (curtailed by strikes) was 93.2 million tons.

Before too long the ingot rate is expected to bounce back close to 100 pct of rated capacity. It may then stay there for a number of weeks before declining moderately toward the end of the year.

**Tonnage Items Tight . . .** Demand is strongest for tonnage products including sheets, pipe, bars, light plates, structurals, and oil country goods.

Merchant trade products are definitely soft. But manufacturers' wire and rod business is "satisfactory." And mechanical and pressure tubing are holding up well.

The tinplate market is strong. While producers have not opened books for fourth quarter, they don't expect much if any recession in the period, even though fourth quarter is normally a slow time for tinplate.

A recheck of demand for oil country goods indicates good business at least through remainder of this year.

Steelmaking operations this week are scheduled at 96.0 pct of rated capacity, up three points from last week's revised rate.



Chance Vought F7U Cutlass

**Here's a simple equation:**

**NO HIGH ALLOY STEEL = NO PLANE**

Without stainless steel, super-high-temperature steels and special electrical alloys, it just wouldn't be possible to build, power and control a plane in the over-600-miles-per-hour class. That is our job: to develop and produce such metals . . . and if you have any problems that involve resisting corrosion, heat, wear and great stress, or require special magnetic properties, we're the people to see. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

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**Allegheny Ludlum**

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## Market Briefs and Bulletins

**Boost Aluminum Prices . . .** Effective July 15 Aluminum Co. of America has boosted 99 pct aluminum pig  $\frac{1}{2}\text{¢}$  to 20.0¢ per lb and 99+ pct ingot 1¢ to 21.5¢ per lb. Other ingot grades have been increased  $\frac{1}{2}\text{¢}$  per lb or more depending on form and composition. Mill product prices will go up shortly. Alcoa states that the increases were made necessary by the recent wage increase and higher cost of materials and services.

**Detroit Steel Market Strong . . .** Some independent auto-makers will be completely out from under conversion this month. But one body manufacturer for other independents is still resorting to warehouse and even broker steel to fill current requirements. At least one of the Big Three has already booked conversion into the fourth quarter. The feeling is, however, that this particular company will have to use only small supplementary tonnages of premium steel in that quarter and will finish up the year operating from regular mill sources.

**Machinery Main Export . . .** Machinery and equipment are by far the largest group of commodities exported from the U. S., reports Council for Technological Advancement. The \$3 billion worth of machinery and equipment exported last year amounted to 20 pct of total U. S. exports, and in the past few years export markets have accounted for about 12 pct of total machinery and equipment sales.

**Volume Up, Profits Down . . .** Purchasing Agents Assn. of Chicago reports business volume in June was slightly higher than in May and considerably above the level of last June. Profits, however, continued the downward trend which has persisted for several months.

**Navy Orders Largest Drydock . . .** General Construction Co., Seattle, will start construction next month of the largest U. S. Navy floating drydock ever ordered. Cost is estimated at \$4.1 million.

**Bethlehem Expands . . .** Bethlehem Steel Corp. will spend \$30 million on structural mills at Bethlehem, Pa. Included in the company's program are plans to revamp wide-flange mills and add an additional standard shape mill. The expansion is covered by Certificates of Necessity.

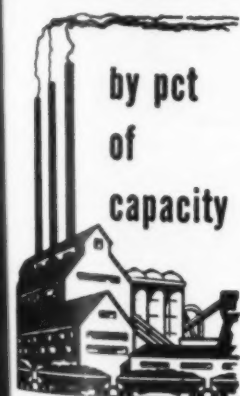
**Fight Wage Increase . . .** Canada's steel industry is preparing to battle requests for further wage increases by the United Steelworkers of America (CIO-CCL) which is campaigning to match the wage gains achieved in the U. S. Negotiations between the union and Steel Co. of Canada, Ltd., and Algoma Steel Corp. ended with the companies holding out against any increase. The Canadian union cannot legally strike since the contract still has another year to run.

**Bring In Openhearth . . .** Granite City Steel, in the final stages of a \$62 million expansion program, brought in the last of three 300-ton openhearth furnaces last week. Previously a source of midwestern pig iron, Granite City will now be using nearly all of its iron output in its own furnaces.

**New Railway to Dallas . . .** Santa Fe Ry. System's plan to build a rail line costing approximately \$4 million directly into Dallas moved a step nearer fulfillment with the filing of an application before the Interstate Commerce Commission last week. The proposed new line would run from Sanger, Tex., to a point near Reinhardt, Tex., and then into Dallas.

**Set Sulfur Quotas . . .** Exports of crude sulfur during the third quarter are to be limited to 250,000 long tons, and refined sulfur exports will be restricted to 15,000 long tons, U. S. Office of International Trade has decided. Effective July 1, 1953, quantitative quota limitations are removed from exports of conditioned sulfur and other forms of agricultural sulfur.

## STEEL OPERATIONS

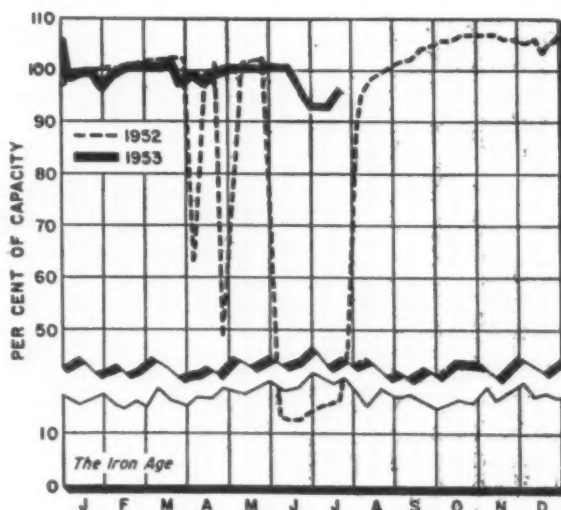


**District Operating Rates**

District	Week of July 12	Week of July 5
Pittsburgh	98.0	96.0*
Chicago	97.0	98.5
Philadelphia	97.5	97.5
Valley	99.0	96.0*
West	106.0	100.0*
Cleveland	95.0	90.0*
Buffalo	106.5	106.5
Detroit	105.0	87.0*
Birmingham (South)	102.5	101.0
Wheeling	100.0	100.0*
South Ohio River	92.0	85.5*
St. Louis	85.0	85.0*
East	41.0	77.0
<b>AGGREGATE</b>	<b>96.0</b>	<b>93.0*</b>

Beginning Jan. 1, 1953, operations are based on annual capacity of 117,522,470 net tons.

\* Revised



## Aluminum Wages Up, Prices Follow

**Alcoa signs with USW and two AFL unions . . . Grant 8½¢ per hour pay hike . . . Firm says higher prices must follow . . . No word from Reynolds, Kaiser—By R. L. Hatschek.**

Wage negotiations between Aluminum Co. of America and United Steelworkers of America (CIO), International Union of Aluminum Workers (AFL) and Trades Council (AFL) have come to a quiet conclusion. Net result in both new agreements is an 8½¢ per hour wage boost, same as the steelworkers' raise.

Alcoa followed this with an increase in its raw aluminum prices. Standard pig is 20.0¢ and ingot is 21.5¢ per lb, effective July 15. Adjustments of other product prices will be made shortly. (See p. 161 for further details.)

**End Differential . . .** Agreements were reached on July 9 covering 18 of the company's plants and about 30,000 workers. Besides the 8½¢ wage increase at these plants an additional 2¢ was granted at southern plants, eliminating the North-South wage differential.

Other benefits included vacation and holiday pay, continuation of the AFL escalation contract and increasing it to 5¢ each July 1, and elimination of certain inequities at one plant covered by USW.

**Extend Study . . .** The present job evaluation study being made jointly by the USW and Alcoa is

scheduled for completion by July 1, 1954, 30 days prior to the expiration of the new USW agreement.

Upon completion of the study, the lowest rate at the Badin, Alcoa, Rockdale and Mobile plants will be the same as the lowest rate for men at New Kensington, provided the job classifications are the same.

**Others Not Signed . . .** Two other unions also represent workers at other Alcoa plants. They are the United Auto Workers, representing some 5000 people at four plants, and the United Mine Workers, which covers another 1000 at two plants.

All four of the UAW locals have indicated the wish to open wage talks very soon, probably before the month is out. Same goes for the Buffalo local of the UMW but the Rosiclare UMW local so far has said nothing.

**Will Set Trend . . .** At presstime Reynolds Metals Co. was still negotiating but declined to make any further comment on the labor situation. Status of Kaiser Aluminum & Chemical Co. discussions, which began Tuesday, was also unknown. One of the unusual aspects of this entire set of wage talks has been the very tight security. Generally

there are some leaks—but not this time.

It's expected, though, that the Alcoa settlement will pretty much set the pattern for the entire aluminum industry. One of the ultimate aims of the USW is to get uniform contracts with all three of the aluminum producers.

**New Output Record . . .** Before all this wage business came up the industry eclipsed its March production record for a new alltime high in May. Output for the month totaled 105,477 net tons of pig and ingot aluminum. This tops the previous month by well over 3000 tons and the previous record by 577 tons. How long this one will stand isn't worth betting on.

**Prospect for Nickel . . .** With ever increasing demand for nickel, Canadian mining companies and prospectors are giving special attention to discoveries which may contain nickel. A number of such finds have been made in sections of Ontario other than the famed Sudbury district as well as far up in the Yukon.

But new finds must be considered prospects at this time as sufficient work has not yet been done to determine actual possibilities and ore tonnage mostly has been indicated only by diamond drilling.

**Explore Find . . .** One company giving special attention to nickel is Quebec Nickel Corp., which holds a property of 192 claims (a claim usually runs 40 acres) covering an area of 15 miles in length and from a mile to 1½ miles in width in the Gordon Lake section some 65 miles north of Kenora, Ont.

Diamond drilling has proved one length of 4000 ft and another of 1500 ft with widths from 15 ft up to 42 ft. Values indicated are from 1 to 5 pct nickel with some reported as high as ten pct. Most of the property is yet to be tested.

### NONFERROUS METAL PRICES

(Cents per lb except as noted)

	July 8	July 9	July 10	July 11	July 13	July 14
Copper, electro, Conn. . . . .	29.75— 30.00	29.75— 30.00	29.75— 30.00	29.75— 30.00	29.75— 30.00	29.75— 30.00
Copper, Lake delivered . . . . .	30.125	30.125	30.125	30.125	30.125	30.125
Tin, Straits, New York . . . . .	83.00	83.50	83.00	.....	82.00	82.00*
Zinc, East St. Louis . . . . .	11.00	11.00	11.00	11.00	11.00	11.00
Lead, St. Louis . . . . .	13.30	13.30	13.30	13.30	13.30	13.30

Note: Quotations are going prices.

\*Tentative

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# Nonferrous Prices

(Effective July 14, 1953)

## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

### Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)  
Flat Sheet: 0.188-in., 2S, 3S, 32.9¢; 4S, 61S-O, 34.9¢; 52S, 37.2¢; 24S-O, 24S-OAL, 35.9¢; 75S-O, 75S-OAL, 43.6¢. 0.081-in., 2S, 3S, 34.1¢; 4S, 61S-O, 36.6¢; 52S, 38.9¢; 24S-O, 24S-OAL, 37.2¢; 75S-O, 75S-OAL, 45.7¢. 0.032-in., 2S, 3S, 35.9¢; 4S, 61S-O, 40.6¢; 52S, 43.5¢; 24S-O, 24S-OAL, 45.6¢; 75S-O, 75S-OAL, 57.0¢.

Plate, 1/4-in. and heavier: 2S-F, 3S-F, 30.9¢; 4S-F, 33.0¢; 52S-F, 34.7¢; 61S-O, 33.6¢; 24S-O, 24S-OAL, 35.4¢; 75S-O, 75S-OAL, 42.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.4¢ to 60.3¢; 12 to 14, 37.1¢ to 97.2¢; 24 to 26, 39.7¢ to 112.7¢; 36 to 38, 47.0¢ to 118.6¢.

Rod, Rolled: 1.064-in. to 4.5-in., 2S-F, 3S-F, 41.0¢ to 36.6¢; cold-finished, 0.375-in. to 3.499-in., 2S-F, 3S-F, 44.2¢ to 38.3¢.

Screw Machine Stock: Rounds, 11S-T3, 1/8 to 11/32-in., 58.4¢ to 45.9¢; 1/4 to 1 1/2-in., 45.3¢ to 42.6¢; 1 9/16 to 3-in., 42.0¢ to 39.3¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 43.2¢ to 31.7¢; 52S, 52.4¢ to 38.3¢; 17S-T4, 59.0¢ to 41.0¢; 61S-T4, 52.9¢ to 40.5¢.

Extruded Tubing: Rounds, 63S-T5, OD 1 1/4 to 2 in., 40.5¢ to 59.0¢; 2 to 4 in., 36.6¢ to 49.7¢; 4 to 6 in., 37.1¢ to 45.3¢; 6 to 9 in., 37.6¢ to 47.5¢.

Roofing Sheet: Flat, per sheet, 0.019-in., 2S x 72 in., \$1.247; x 96 in., \$1.662; x 120 in., \$2.077; x 144 in., \$2.494. Coiled sheet, per lb, 0.019 in. x 28 in., 30.8¢; 0.024 in. x 28 in., 29.8¢.

### Magnesium

(F.o.b. mill, freight allowed)

Sheet and Plate: FSI-O, 1/4 in., 66¢; 3/16 in., 68¢; 1/2 in., 70¢; B & S Gage 10, 71¢; 12, 75¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam 1/4 to 0.311 in., 77¢; 1/2 to 3/4 in., 60.5¢; 1/4 to 1.749 in., 56¢; 2 1/2 to 5 in., 51.5¢. Other alloys higher. Base up to 3/4 in. diam, 10,000 lb; 3/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, 1/4 to 5/16 in., \$1.43; 5/16 to 3/4 in., \$1.29; 3/4 to 1 in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall: OD, 3/4 to 1 in., 64¢; 1 to 2 in., 60¢; 2 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1 1/2 in., 10,000 lb; 1 1/2 to 3 in., 20,000 lb; over 3 in., 30,000 lb.

### Titanium

(100,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

### Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86 1/2	67 1/2	92 1/2
Strip, CR	92 1/2	70 1/2	98 1/2
Rod, bar	82 1/2	65 1/2	88 1/2
Angles, HR	82 1/2	65 1/2	88 1/2
Plate, HR	84 1/2	66 1/2	90 1/2
Seamless Tube	115 1/2	100 1/2	137 1/2
Shot, blocks	60		

### Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	48.51	46.83	50.58
Copper, h-r	50.48		
Copper, drawn		48.08	
Low brass	45.99	45.68	
Yellow brass	42.87	42.56	
Red brass	47.11	46.80	
Naval brass	47.01	41.07	42.33
Leaded brass			39.95
Com. bronze	48.76	48.45	
Mang. bronze	50.73	44.62	46.18
Phos. bronze	70.50	70.75	
Muntz metal	44.91	40.47	41.72
Ni silver, 10 pct	56.56	59.83	62.89

## PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	20.50
Aluminum pig	19.50
Antimony, American, Laredo, Tex.	34.50
Beryllium copper, per lb conta'd Be	\$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	\$72.75
Bismuth, ton lots	\$2.25
Cadmium, de'd	\$2.00
Cobalt, 97-99% (per lb)	\$2.40 to \$2.47
Copper, electro, Conn. Valley	29.50 to 30.00
Copper, Lake, delivered	30.125
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.8%, dollars per troy oz.	\$2.25
Iridium, dollars per troy oz.	\$165 to \$175
Lead, St. Louis	13.30
Lead, New York	13.50
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb.	27.00
Magnesium, sticks, 100 to 500 lb.	45.00 to 47.00
Mercury, dollars per 76-lb. flask, f.o.b. New York	\$190 to \$193
Nickel electro, f.o.b. N. Y. warehouse	63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.25
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$93
Silver, New York, cents per oz.	85 25
Tin, New York	82.00
Titanium, sponge	\$5.00
Zinc, East St. Louis	11.00
Zinc, New York	11.83
Zirconium copper, 50 pct	\$6.20

## REMELTED METALS

### Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	26.00
No. 120	25.00
No. 123	24.00
80-10-10 ingot	
No. 305	30.00
No. 315	28.00
88-10-2 ingot	
No. 210	38.25
No. 215	34.75
No. 245	30.25
Yellow ingot	
No. 405	21.25
Manganese bronze	
No. 421	26.50

### Aluminum Ingot

(Cents per lb de'd, 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	24.50-25.50
0.60 copper, max.	24.25-25.00
Piston alloys (No. 122 type)	22.75-23.50
No. 12 alum. (No. 2 grade)	22.00-23.00
108 alloy	22.75-23.50
195 alloy	23.00-25.00
13 alloy (0.60 copper max.)	24.50-25.00
ASX-679	22.50-23.25

### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2%	23.75-24.00
Grade 2—92-95%	23.00
Grade 3—90-92%	22.00
Grade 4—85-90%	21.00-22.00

## ELECTROPLATING SUPPLIES

### Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	45.14
Electrodeposited	37.98
Flat rolled	45.64
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	79.50
Roller, depolarized	80.50
Cadmium	\$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	94 1/2

### Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz lots, per oz.	75 1/2
Sodium cyanide, 95 pct domestic	
200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

## SCRAP METALS

### Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	28 1/2	27 1/2
Yellow brass	21 1/2	19 1/2
Red brass	25 1/2	24 1/2
Comm. bronze	26 1/2	25 1/2
Mang. bronze	20	19 1/2
Brass rod ends	19 1/2	

### Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	23 1/2—24
No. 2 copper wire	23
Light copper	20 1/2
*Refinery brass	19 1/2—20
*Dry copper content.	

### Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	23 1/2
No. 2 copper wire	23
Light copper	20 1/2
No. 1 composition	18
No. 1 comp. turnings	17 1/2
Rolled brass	14 —14 1/2
Brass pipe	14 —14 1/2
Radiators	14 —14 1/2

### Aluminum

Mixed old cast	13 1/2—14
Mixed new clips	15 1/2—16
Mixed turnings, dry	13 1/2—14 1/2
Pots and pans	13 1/2—14

### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

### Copper and Brass

No. 1 heavy copper and wire	23
No. 2 heavy copper and wire	20
Light copper	18
New type shell cuttings	13
Auto radiators (unsweated)	13
No. 1 composition	16 1/2—17
No. 1 composition turnings	16 —16 1/2
Unlined red car boxes	15 —16
Cocks and faucets	15
Mixed heavy yellow brass	11 1/2
Old rolled brass	14
Brass pipe	16
New soft brass clippings	16 1/2—17 1/2
Brass rod ends	16 —16 1/2
No. 1 brass rod turnings	15 —16

### Aluminum

Alum. pistons and struts	7 —7 1/2
Aluminum crankcases	10
2S aluminum clippings	14
Old sheet and utensils	10
Borings and turnings	7 1/2
Misc. cast aluminum	19
Dural clips (24S)	10

### Zinc

New zinc clippings	5 1/2
Old zinc	4 1/2
Zinc routings	2 1/2
Old die cast scrap	3 1/2

### Nickel and Monel

Pure nickel clippings	100
Clean nickel turnings	85
Nickel anodes	100
Nickel rod ends	100
New Monel clippings	33 —35
Clean Monel turnings	25
Old sheet Monel	30 —32
Nickel silver clippings, mixed	14
Nickel silver turnings, mixed	12

### Lead

Soft scrap, lead	10 1/2—11
Battery plates (dry)	6 —6 1/2
Batteries, acid free	4.40—4.60

### Magnesium

Segregated solids	15 —16
Castings	14 —15

### Miscellaneous

Block tin	70 —75
No. 1 pewter	47 —50
No. 1 auto babbitt	40
Mixed common babbitt	12 —12 1/2
Solder joints	15
Siphon tops	40
Small foundry type	15
Monotype	14
Lino. and stereotype	12 1/2
Electrotype	11
Hand picked type shells	8 1/2
Lino. and stereo. dross	5
Electro dross	4 1/2

- **NON-FERROUS METALS**
- **ORES AND MINERALS**
- **METALLIC RESIDUES**
- **METAL SCRAP**
- **FERRO ALLOYS**
- **ZINC**

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# Iron and Steel Scrap Markets

## Who Says Scrap Prices Are Depressed?

**Sale of No. 2 bundles in Pittsburgh pushes No. 1 heavy melting to a top of \$48 . . . Buffalo comes through with up to \$2 in hikes . . . Other gains registered . . . Mill stocks are lower.**

Scrap prices are not now depressed. As IRON AGE mentioned some weeks ago when dealer stocks are at a low ebb in the face of slow demand and mills still strive to make as much steel as they can—something's bound to give.

It's usually not prices when fair-sized orders intrude into an otherwise dull market. This week in Pittsburgh, in Buffalo, and other centers steel scrap advanced again on the basis of sales.

Generating upward pressure on the whole lineup of steel grades a sale of No. 2 bundles at Pittsburgh pushed No. 1 heavy melting to a top of \$48 per ton, highest free market point in years. Steel grades in Buffalo advanced up to \$2 and other prices as much as \$4.50. Cleveland openhearth grades racked up another \$1 increase. Most Detroit steel scrap did the same.

On the whole scrap trading is slow—seasonally so at this time. But buying apathy for the past few months aggravates the situation. Mill stockpiles have probably slimmed down considerably. Some independent mills are reported to have low inventory. Many big plants are still comfortable but not glutted.

**Pittsburgh**—Scrap prices moved upward again this week following a momentary lull. Increase is based on a sale of No. 2 bundles to an independent mill, with other grades moving up accordingly. The \$2 rise pegged No. 1 heavy melting steel at \$48 top, highest free market price in years. Blast furnace scrap is \$1 higher, and low phos rose \$2 per ton. On basis of latest railroad list, No. 1 railroad rose \$2 to a top of \$49. Specialties were up \$1 and malleable \$2. Cast market is firm but prices are unchanged.

**Chicago**—Scrap continued to hold strongly and heavy melting grades were in low supply. Brokers buying prices generally now equal old mill prices, though few new sales have been reported in any volume. Out-of-area dealer bundles sales were moving up, and generally the market continued strong. Turnings were not quite so strong as in the previous week. In an absence of mill sales, railroad grades continued to command better prices.

**Philadelphia**—Scrap continued quiet this week in the midst of the vacation period. Many scrap yards have shut down as have several consumers. Prices remain unchanged from last week's quotations and some sales were reported at the current prices. Feeling is firm and the trade expects the market to remain stable.

**New York**—With most brokers trading at a slow tempo, prices were relatively unchanged. Cast grades were on a nominal price basis—or those prices which should hold if buyers enter market for fair-sized orders. Mill inspection is reported exceptionally fussy. Consumer stockpiles have probably slimmed down considerably but heavy ordering is postponed. September should see the pickup.

**Detroit**—Prices of most steelmaking grades advanced \$1 on the basis of last sales but signs of inertia produced some skittishness here. Following closing of July automotive lists (when bundles went as high as \$43 and turnings to \$26) there has been little activity here. Present prices may be top. Heavy buying of stove plate sent its price suddenly up \$4.

**Cleveland**—Steelmaking grades moved up \$1 this week on the basis of a sale. Valley prices remained unchanged but no one was willing to admit that a plateau had been reached. One railroad reportedly sold 5 ft material at \$49. Dealers and brokers generally expect present

market strength to continue through August.

**Cincinnati**—Openhearth grades remained unchanged here. Short turnings fell off \$2 to \$28 as openhearth demand dipped. Rails showed more strength. Random lengths moved up \$2 to \$47 and 18 in. crops went from \$53 to \$54. Cast continued to look brighter. No. 1 cupola rose \$1 to \$43.

**St. Louis**—Two East Side steel mills came into the market during the week as did a Peoria melter for substantial tonnages of Nos. 1 and 2 heavy melting steel and bundles, making for higher prices. Some other items including foundry grades were higher in sympathy. Movement has been slow, and stocks in yards are low.

**Birmingham**—Prices were unchanged in this area with the exception of No. 1 cupola cast. The cast market as a whole showed some strength but little was available. One consumer here held up shipments on openhearth scrap—but another had the green light out. Brokers are reportedly quoting higher prices for shipment of scrap to the North.

**Buffalo**—Scrap showed sudden strength in the market here with prices moving as much as \$4.50 a ton higher. Steel grades were increased up to \$2 as one leading consumer placed orders for a substantial tonnage. Nearby buying boosted turnings an average of \$2.50 and recent weakness in cast grades was reversed when a top buyer placed new business from \$1 to \$3 higher. Inquiries from outside the district were a bullish factor.

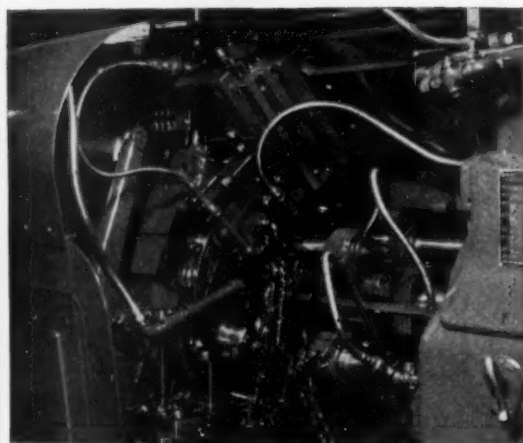
**Boston**—For the first time in weeks prices remained unchanged. Part of the blame for slow activity was placed on vacations. Although cast grades were generally slow, mixed cupola showed a wriggle of demand.

**West Coast**—The mounting price differential between western and mid-west markets has developed a few cross-country inquiries but possibility of shipment appears poor. Freight to Chicago from West Coast points is \$26 which is still insufficient spread. Western markets and prices unchanged last week.



# Free-Machining ENDURO STAINLESS STEEL BARS

**...two Grades  
Fully 90% As Machinable  
As Bessemer Screw Stock**



You can give duplicate steel parts added strength and increased corrosion-resistance . . . and still get economical automatic production. Convert to Free-Machining ENDURO Stainless Steel bars. They're cold-finished by Republic's Union Drawn Steel Division to give you close tolerance, accuracy of section, uniform soundness and fine surface finish . . . plus the high physical and chemical properties of stainless steel. Two grades are fully 90% as machinable as regular Bessemer screw stock. Free-Machining ENDURO is also available in hot-rolled bars and wire. Republic metallurgists give prompt assistance on applications, processing and use. Write:

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**STAINLESS STEEL**



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# Scrap Prices

(Effective July 14, 1953)

## Pittsburgh

No. 1 hvy. melting	\$47.00 to \$48.00
No. 2 hvy. melting	43.00 to 44.00
No. 1 bundles	47.00 to 48.00
No. 2 bundles	41.00 to 42.00
Machine shop turn.	27.00 to 28.00
Mixed bor. and ms. turns	27.00 to 28.00
Shoveling turnings	31.00 to 32.00
Cast iron borings	31.00 to 32.00
Low phos. punch'gs, plate	50.00 to 51.00
Heavy turnings	42.00 to 43.00
No. 1 RR. hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	49.00 to 50.00
Rails 2 ft and under	54.00 to 55.00
RR. steel wheels	52.50 to 53.50
RR. spring steel	52.50 to 53.50
RR. couplers and knuckles	52.50 to 53.50
No. 1 machinery cast.	49.00 to 50.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	41.00 to 42.00
Malleable	50.00 to 51.00

## Chicago

No. 1 hvy. melting	\$43.00 to \$44.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 factory bundles	43.00 to 45.00
No. 1 dealers' bundles	42.00 to 43.00
No. 2 dealers' bundles	36.00 to 38.00
Machine shop turn.	22.00 to 24.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. forge crops	49.00 to 50.00
Low phos. punch'gs, plate	46.00 to 47.00
Low phos. 3 ft and under	46.00 to 48.00
No. 1 RR. hvy. melting	45.00 to 47.00
Scrap rails, random lgth.	49.00 to 51.00
Rerolling rails	55.00 to 56.00
Rails 2 ft and under	54.00 to 56.00
Locomotive tires, cut	49.00 to 50.00
Cut bolsters & side frames	48.00 to 49.00
Angles and splice bars	49.00 to 51.00
RR. steel car axles	54.00 to 55.00
RR. couplers and knuckles	50.00 to 51.00
No. 1 machinery cast.	45.00 to 46.00
Cupola cast.	42.00 to 43.00
Heavy breakable cast.	39.00 to 40.00
Cast iron brake shoes	37.00 to 38.00
Cast iron car wheels	43.00 to 44.00
Malleable	42.00 to 44.00
Stove plate	36.00 to 37.00

## Philadelphia Area

No. 1 hvy. melting	\$43.00 to \$44.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 bundles	44.00 to 45.00
No. 2 bundles	33.50 to 34.50
Machine shop turn.	26.50 to 27.50
Mixed bor., short turn.	30.00 to 31.00
Shoveling turnings	31.00 to 32.00
Clean cast chem. borings	38.50 to 39.00
Low phos. 5 ft and under	44.00 to 45.00
Low phos. 2 ft and under	46.00 to 47.00
Low phos. punchings	46.00 to 47.00
Elec. furnace bundles	45.00 to 46.00
Heavy turnings	42.00 to 43.00
RR. steel wheels	49.00 to 50.00
RR. spring steel	49.00 to 50.00
Rails 18 in. and under	55.00 to 56.00
Cupola cast.	38.00 to 39.00
Heavy breakable cast.	41.00 to 42.00
Cast iron car wheels	46.00 to 47.00
Malleable	46.00 to 47.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast.	45.00 to 46.00
Charging box cast.	39.00 to 40.00

## Cleveland

No. 1 hvy. melting	\$45.00 to \$46.00
No. 2 hvy. melting	41.00 to 42.00
No. 1 bundles	45.00 to 46.00
No. 2 bundles	39.00 to 40.00
No. 1 busheling	45.00 to 46.00
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	28.00 to 29.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. 2 ft and under	46.00 to 47.00
Drop forge flashings	45.00 to 46.00
No. 1 RR. hvy. melting	47.00 to 48.00
Rails 3 ft and under	54.00 to 55.00
Rails 18 in. and under	56.00 to 57.00
Railroad grate bars	40.00 to 41.00
Steel axle turnings	38.00 to 39.00
Railroad cast	48.00 to 49.00
No. 1 machinery cast.	49.00 to 50.00
Stove plate	44.00 to 45.00
Malleable	49.00 to 50.00

## Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

## Youngstown

No. 1 hvy. melting	\$45.00 to \$46.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 bundles	45.00 to 46.00
No. 2 bundles	40.00 to 41.00
Machine shop turn.	27.00 to 28.00
Shoveling turnings	31.00 to 32.00
Cast iron borings	31.00 to 32.00
Low phos. plate	48.00 to 49.00

## Buffalo

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	40.00 to 40.50
No. 1 busheling	40.00 to 40.50
No. 1 bundles	44.00 to 45.00
No. 2 bundles	38.00 to 38.50
Machine shop turn.	26.00 to 26.50
Mixed bor. and turn.	31.50 to 32.00
Shoveling turnings	33.00 to 33.50
Cast iron borings	32.00 to 32.50
Low phos. plate	47.00 to 48.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	53.00 to 54.00
RR. steel wheels	53.00 to 53.50
RR. spring steel	53.00 to 53.50
RR. couplers and knuckles	53.00 to 53.50
No. 1 machinery cast.	44.00 to 45.00
No. 1 cupola cast.	40.00 to 41.00

## Detroit

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$35.00 to \$36.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 bundles, openhearth	38.00 to 39.00
No. 2 bundles	31.00 to 32.00
New busheling	34.00 to 35.00
Drop forge flashings	34.00 to 35.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Electric furnace, bundles	38.00 to 39.00
Low phos. punch'gs, plate	38.00 to 39.00
No. 1 cupola cast.	43.00
Heavy breakable cast.	34.00
Stove plate	34.00
Automotive cast.	43.00

## St. Louis

No. 1 hvy. melting	\$43.00 to \$45.00
No. 2 hvy. melting	37.00 to 38.00
No. 2 bundled sheets	34.00 to 35.00
Machine shop turn.	17.00 to 19.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	12.00 to 14.00
Rails, random lengths	48.00 to 50.00
Rails 18 in. and under	52.00 to 54.00
Locomotive tires, uncut	44.00 to 46.00
Angles and splice bars	47.00 to 48.00
Std. steel car axles	53.00 to 54.00
RR. spring steel	47.00 to 49.00
Cupola cast.	41.00 to 42.00
Hvy. breakable cast.	36.00 to 38.00
Cast iron brake shoes	40.00 to 41.00
Stove plate	36.00 to 37.00
Cast iron car wheels	43.00 to 44.00
Malleable	42.00 to 43.00
Unstripped motor blocks	35.00 to 36.00

## New York

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$36.50 to \$37.50
No. 2 hvy. melting	30.00 to 31.00
No. 2 bundles	28.00 to 29.00
Low phos. 2 ft and less	39.50 to 40.50
Machine shop turn.	20.00
Mixed bor. and turn.	20.00
Shoveling turnings	23.00 to 24.50
Clean cast chem. borings	29.00 to 30.00
No. 1 machinery cast.	41.00 to 42.00
Mixed yard cast.	33.00 to 34.00
Charging box cast.	34.00 to 35.00
Heavy breakable cast.	34.00 to 35.00
Unstripped motor blocks	22.00 to 23.00

## Birmingham

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 bundles	33.00 to 34.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	29.50 to 30.50
Machine shop turn.	20.75 to 21.75
Shoveling turnings	22.75 to 23.75
Cast iron borings	22.75 to 23.75
Electric furnace bundles	32.00 to 33.00
Bar crops and plate	39.00 to 40.00
Structural and plate, 2 ft.	36.00 to 37.00
No. 1 RR. hvy. melting	35.00 to 36.00
Scrap rails, random lgth.	41.00 to 42.00
Rerolling rails	45.00 to 46.00
Rails, 18 in. and under	45.00 to 46.00
Angles & splice bars	45.00 to 46.00
Std. steel axles	45.00 to 46.00
No. 1 cupola cast.	43.00 to 44.00
Stove plate	35.00 to 36.00
Cast iron car wheels	45.00 to 46.00
Charging box cast.	30.00 to 31.00
Heavy breakable	30.00 to 31.00
Unstripped motor blocks	32.00 to 33.00
Mashed tin cans	17.00 to 18.00

## Boston

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 bundles	32.50 to 33.00
No. 2 bundles	27.50 to 28.00
No. 1 busheling	32.50 to 33.00
Elec. furnace, 3 ft & under	34.00 to 35.00
Machine shop turn.	17.00 to 18.00
Mixer bor. and short turn.	21.00
Shoveling turnings	21.00
Clean cast chem. borings	28.17
No. 1 machinery cast	30.00 to 31.00
Mixed cupola cast.	26.00 to 28.00
Heavy breakable cast.	28.00 to 30.00
Stove plate	27.00
Unstripped motor blocks	22.00

## Cincinnati

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$42.00 to \$43.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 bundles	42.00 to 43.00
No. 2 bundles	36.00 to 37.00
Machine shop turn.	21.00 to 22.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	25.00 to 26.00
Low phos. 18 in. & under	46.00 to 47.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	53.00 to 54.00
No. 1 cupola cast.	42.00 to 43.00
Hvy. breakable cast.	31.00 to 32.00
Drop broken cast.	48.00 to 49.00

## San Francisco

No. 1 hvy. melting	\$28.00
No. 2 hvy. melting	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 3 bundles	18.00
Machine shop turn.	10.00
Cast iron borings	15.00
No. 1 RR. hvy. melting	29.00
No. 1 cupola cast.	\$38.00 to 39.00

## Los Angeles

No. 1 hvy. melting	\$24.00
No. 2 hvy. melting	20.00
No. 1 bundles	23.00
No. 2 bundles	20.00
No. 3 bundles	16.00
Mach. shop turn.	8.00
Shoveling turnings	12.00
Cast iron borings	12.00
Elec. fur. 1 ft and under	29.00
No. 1 RR. hvy. melting	24.00
No. 1 cupola cast.	\$36.00 to 38.00

## Seattle

No. 1 hvy. melting	\$31.00
No. 2 hvy. melting	27.00
No. 1 bundles	28.00
No. 2 bundles	23.00
No. 1 cupola cast.	37.00
Mixed yard cast.	35.00

## Hamilton Ont.

No. 1 hvy. melting	\$32.00
No. 1 bundles	32.50
No. 2 bundles	32.00
Mechanical bundles	30.50
Mixed steel scrap	28.50
Bushelings	27.50
Bush., new fact. prep'd.	30.50
Bush., new fact. unprep'd.	29.50
Short steel turnings	26.50
Mixed bor. and turn.	23.50
Rails, remelting	32.50
Rails, rerolling	41.80
Cast scrap	50.00

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SEATTLE, WASH.

**LEADERS IN IRON AND STEEL SCRAP SINCE 1889**

July 16, 1953

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# Comparison of Prices

(Effective July 14, 1953)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	July 14 1953	July 7 1953	June 16 1953	July 15 1952
<b>Flat-Rolled Steel: (per pound)</b>				
Hot-rolled sheets	3.925¢	3.925¢	3.775¢	3.60¢
Cold-rolled sheets	4.775	4.775	4.575	4.35
Galvanized sheets (10 ga)	5.275	5.275	5.075	4.80
Hot-rolled strip	3.925	3.925	3.725	3.50
Cold-rolled strip	5.575	5.575	5.20	4.75
Plate	4.10	4.10	3.90	3.70
Plates wrought iron	9.00	9.00	9.00	7.85
Stain's C-R strip (No. 302)	41.50	41.50	39.75	36.75
<b>Tin and Terneplate: (per base box)</b>				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.70
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.40
Special coated mfg. ternes	7.75	7.75	7.75	7.50
<b>Bars and Shapes: (per pound)</b>				
Merchant bars	4.15¢	4.15¢	3.95¢	3.70¢
Cold finished bars	5.20	5.20	4.925	4.55
Alloy bars	4.875	4.875	4.675	4.30
Structural shapes	4.10	4.10	3.85	3.65
Stainless bars (No. 302)	35.50	35.50	34.00	31.50
Wrought iron bars	10.05	10.05	10.05	9.50
<b>Wire: (per pound)</b>				
Bright wire	5.525¢	5.525¢	5.225¢	4.85¢
<b>Rails: (per 100 lb.)</b>				
Heavy rails	\$4.325	\$4.325	\$4.075	\$3.60
Light rails	5.20	5.20	5.00	4.00
<b>Semifinished Steel: (per net ton)</b>				
Revolving billets	\$62.00	\$62.00	\$59.00	\$56.00
Slabs, rerolling	62.00	62.00	59.00	56.00
Forging billets	75.50	75.50	70.50	66.00
Alloy blooms, billets, slabs	82.00	82.00	76.00	70.00
<b>Wire Rod and Skelp: (per pound)</b>				
Wire rods	4.525¢	4.525¢	4.325¢	4.10¢
Skelp	3.75	3.75	3.55	3.35
<b>Finished Steel Composite: (per pound)</b>				
Base price	4.634¢	4.634¢	4.417¢	4.181¢

## Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips.

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem B3	58.00	58.50	59.00	59.50	
Birmingham R3	52.38	52.88			
Birmingham W9	52.38	52.88			
Birmingham S5	52.38	52.88			
Buffalo R3	56.00	56.50	57.00		
Buffalo H1	56.00	56.50	57.00		
Buffalo W6	56.00	56.50	57.00		
Chicago I4	56.00	56.50	56.50	57.00	
Cleveland A5	56.00	56.50	56.50	57.00	61.00
Cleveland R3	56.00	56.50	56.50		
Dangerfield L3	52.50	52.50	52.50		
Duluth I4	56.00	56.50	56.50	57.00	
Erie I4	56.00	56.50	56.50		
Everett M6		63.25	63.75	57.00	
Fontana K1	62.00	62.50			
Geneva, Utah C7	56.00	56.50	56.50	57.00	61.00
Granite City G2	57.90	58.40	58.90		
Hubbard Y1	56.00	56.50	56.50		
Minnequa C6	58.00	59.00	59.00		
Monessen P6	56.00				
Neville Isl. P4	56.00	56.50	56.50		
Pittsburgh U1	56.00			57.00	
Sharpville S3	56.00	56.50	56.50	57.00	
Steelton B3	58.00	58.50	59.00	59.50	64.00
Swedeland A2	60.00	60.50	61.00	61.50	
Toledo I4	56.00	56.50	56.50	57.00	
Troy, N. Y. R3	58.00	58.50	59.00	59.50	64.00
Youngstown Y1	56.00	56.50	56.50	57.00	
N. Tonawanda T1		56.50	57.00		

**DIFFERENTIALS:** Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, H1, \$68.25; Jackson, J1, G1, \$67.00. Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add \$1 per ton for 0.75 pct or more phosphorus. Manganese as above. Bessemer ferrosilicon prices are \$1 over comparable silvery iron.

## Pig Iron: (per gross ton)

	July 14 1953	July 7 1953	June 16 1953	July 15 1952
Foundry, del'd Phila.	\$62.19	\$62.19	\$60.69	\$58.19
Foundry, Valley	56.50	56.50	55.00	52.50
Foundry, Southern, Cin'ti	60.43	60.43	58.93	55.58
Foundry, Birmingham	52.88	52.88	51.38	48.88
Foundry, Chicago	56.50	56.50	55.00	52.50
Basic del'd Philadelphia	61.27	61.27	59.77	57.27
Basic, Valley furnace	56.00	56.00	54.50	52.00
Malleable, Chicago	56.50	56.50	55.00	52.50
Malleable, Valley	56.50	56.50	55.00	52.50
Ferromanganese, cents per lb.	10.00¢	10.00¢	10.00¢	9.00¢

† The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

‡ Average of U. S. Prices quoted on Ferroalloy pages, 76 pct Mn basis

## Pig Iron Composite: (per gross ton)

Pig iron	\$56.76	\$56.76	\$55.26	\$52.77
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## Scrap: (per gross ton)

No. 1 steel, Pittsburgh	\$47.50	\$45.50	\$42.50	\$39.50
No. 1 steel, Phila. area	43.50	43.50	40.50	40.50
No. 1 steel, Chicago	43.50	42.50	38.50	38.00
No. 1 bundles, Detroit	38.50	37.50	37.50	41.15*
Low phos., Youngstown	48.50	48.50	46.50	46.50*
No. 1 mach'y cast, Pittsburgh	49.50	49.50	49.50	82.00
No. 1 mach'y cast, Philadel'a	45.50	45.50	47.50	82.00†
No. 1 mach'y cast, Chicago	45.50	45.00	43.00	41.50

\* Basing pt., less broker's fee. † Shipping pt., less broker's fee.

## Steel Scrap Composite: (per gross ton)

No. 1 heavy melting scrap	\$44.83	\$43.83	\$40.50	\$39.33
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## Coke, Connellsville: (per net ton at oven)

Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.75
Foundry coke, prompt	17.25	17.25	17.25	17.75

## Nonferrous Metals: (cents per pound to large buyers)

Copper, electrolytic, Conn.	29.875¢	29.875¢	29.875¢	24.50
Copper, Lake, Conn.	30.125	30.125		24.625
Tin, straits, New York	82.00†	82.75*	92.50	\$1.21½
Zinc, East St. Louis	11.00	11.00	11.00	15.00
Lead, St. Louis	13.30	13.30	13.30	15.40
Aluminum, virgin ingot	20.50	20.50	20.50	19.00
Nickel, electrolytic	63.08	63.08	63.08	59.58
Magnesium, ingot	27.00	27.00	27.00	24.50
Antimony, Laredo, Tex.	34.50	34.50	34.50	39.00

† Tentative. ‡ Average. \* Revised.

## Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

## Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

## STAINLESS STEELS

Base price cents per lb., f.o.b. mill.

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00		14.25
Slabs, billets, rerolling	20.50	22.75	24.75	23.75	36.25	29.50	32.25	18.25		18.50
Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25-37.50	37.50	39.75	39.75	59.00	45.75-46.00	51.25	30.00	30.50-31.00	30.50
Sheets	46.25	46.50	48.75	48.75	64.50	55.50	60.75	40.75	41.25	43.50
Strip, hot-rolled	29.75	32.00	36.75	34.25	55.00	42.00	46.50	26.25		27.00
Strip, cold-rolled	38.25-38.50	41.50	45.50	43.75	66.50	54.50	59.25	34.25	41.25	34.75

**STAINLESS STEEL PRODUCING POINTS**—Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2; (type 316 add 4.5¢) J2; Baltimore, El; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, J4; Lockport, N. Y., R4.

Strip: Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; (type 316 add 4.5¢); W. Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, C5; Lockport, N. Y., S4; Sharon, Pa., S1 (type 301 add ¼¢); Butler, Pa., A7; Wallingford, Conn., W1.

Bars: Baltimore, A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Lockport, N. Y., S4; Canton, O., T5; Ft. Wayne, J4.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11.

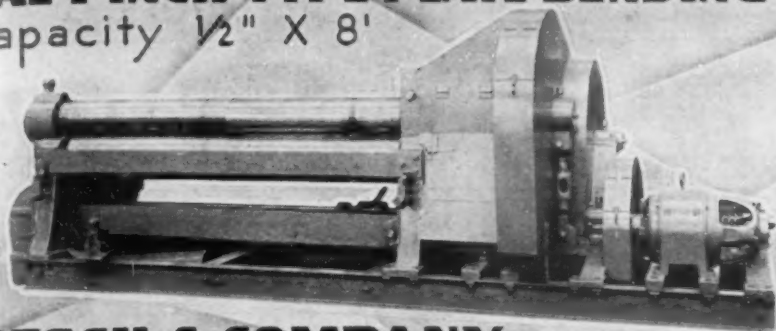
Plates: Brackenridge, Pa., A3; Butler, Pa., A7; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Lockport, N. Y., S4; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3.

Forged discs, die blocks, rings: Pittsburgh, C11; Syracuse, C11; Ferndale, Mich., A3; Washington, Pa., J2.

Forging billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.

## INITIAL PINCH TYPE PLATE BENDING ROLL

Capacity 1/2" X 8'



### Our Line

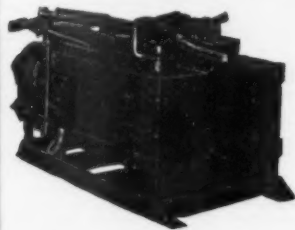
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For Concrete Reinforcing Bars

This is a powerful and fast machine for heavy duty work in both fabricating plants or in the field where large tonnage is required. It will handle as high as 20 tons a day. Circles of any size required in concrete reinforcing work from 18 inches in diameter up can be bent on this machine. It will bend bars with two or more radius on the same bar without stopping the machine.



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1 inch

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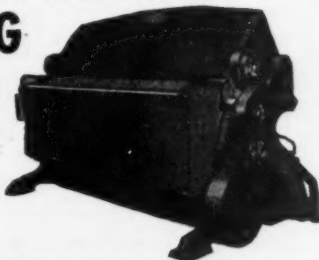
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## BENDING BRAKES

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Bending Steel Plate and Sheet  
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Special Bending Brakes  
Double Folder Brakes



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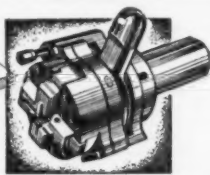
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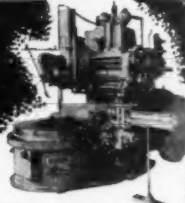
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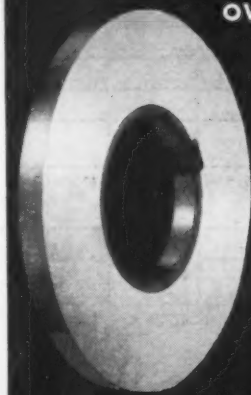
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Manufacturers • Merchants • Distributors  
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# COWLES

## GANG SLITTING KNIVES

OVER 30 YEARS EXPERIENCE



Standard for Service  
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Finish. Made by  
Toolmakers.

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**COP-R-LOY PIPE-SHEETS**

*Ductillite*

THE MODERN TIN PLATE

**LA BELLE CUT NAILS**



**STEEL  
PRICES**(Effective  
July 14, 1953)

	INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL- ING	SHAPES STRUCTURALS		STRIP			
	Carbon Forging Net Ton	Alloy Net Ton	Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem, Pa.				\$82.00 B3			4.15 B3	6.20 B3				
	Buffalo, N. Y.		\$62.00 B3	\$75.50 B3, R3	\$82.00 B3		4.925 B3	4.15 B3	6.20 B3	3.925 B3, R3	5.45 B3	6.00 B3	6.425 B3
	Claymont, Del.												
	Coatesville, Pa.												
	Censahocken, Pa.									4.325 A2		6.20 A2	
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johstown, Pa.		\$62.00 B3	\$75.50 B3	\$82.00 B3			4.15 B3	6.20 B3				
	Newark, N. J.												
	New Haven, Conn.										5.95 A5 6.20 D1		
	Phoenixville, Pa.												
	Putnam, Conn.												
	Sparrows Pt., Md.									3.925 B3	5.45 B3	6.00 B3	6.425 B3
	Worcester, Mass.												
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.												
	Ashland, Ky.									3.925 A7			
	Canton-Massillon, Ohio			\$75.50 R3									
	Chicago, Ill.		\$62.00 U1	\$75.50 R3, U1, W8	\$82.00 U1, W8, R3		4.925 U1	4.10 U1, W8	6.175 U1	3.925 A1, W8	5.95 A1	5.95 R3	
	Sterling, Ill.												
	Cleveland, Ohio			\$75.50 R3							5.45 A5, J3		7.00 J3
	Detroit, Mich.		\$63.00 R5	\$78.50 R5	\$85.00 R5					4.225 G3 4.40 M2	5.45 G3, M2 5.95 D1 6.05 D2	6.50 G3	7.00 D3 8.50 G3
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana		\$62.00 U1	\$75.50 U1	\$82.00 U1, Y1		4.925 J3	4.10 J3, U1	6.175 U1, J3	3.925 J3, U1, Y1	5.70 J3	5.95 U1, J3 6.45 Y1	
	Granite City, Ill.												
	Kokomo, Ind.										5.45 A7		
	Middletown, Ohio												
	Niles, Ohio Sharon, Pa.									4.225 S1	5.80 S1	5.95 S1	7.05 S1
	Pittsburgh, Pa. Midland, Pa.	\$50.00 U1	\$62.00 U1	\$62.00 U1 \$62.50 J3	\$75.50 J3, U1	\$82.00 U1	3.75 U1 3.85 J3	4.925 U1	4.10 J3, U1	6.175 J3, U1	4.425 S7, S9 5.45 B4, J3 6.15 S7		7.00 J3
	Portsmouth, Ohio												
	Weirton, Wheeling, Follansbee, W. Va.							4.35 W3		4.025 W3	5.45 F3, W3	6.30 W3	
	Youngstown, Ohio				\$82.00 Y1	3.75 R3, U1		4.10 Y1		3.925 R3, U1, Y1	5.45 R3, Y1	5.95 U1 6.45 Y1	6.30 Y1
WEST	Fontana, Cal.	\$86.00 K1	\$88.00 K1	\$81.00 K1	\$94.50 K1	\$101.00 K1		4.75 K1	6.825 K1	4.70 K1	7.35 K1	7.05 K1	
	Geneva, Utah				\$75.50 C7			4.10 C7	6.175 C7				
	Kansas City, Mo.							4.80 S2		4.625 S2		7.10 S2	
	Los Angeles, Torrance, Cal.				\$94.50 B2	\$102.00 B2		4.80 B2, C7	6.85 B2	4.675 B2, C7			
	Minnequa, Colo.												
	San Francisco, Niles, Pittsburg, Cal.				\$94.50 B2			4.75 B2 4.91 P9	6.80 B2	4.675 B2, C7			
	Seattle, Wash.				\$94.50 B2, S11			4.85 B2	6.90 B2				
SOUTH	Atlanta, Ga.									4.475 A8			
	Fairfield, Ala. Alabama City, Ala.			\$62.00 T2	\$75.50 T2			4.10 R3, T2	6.175 T2	3.925 R3, T2		5.95 T2	
	Houston, Texas				\$85.50 S2	\$92.00 S2		4.60 S2		4.425 S2			



*Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.*

IRON AGE

**SHEETS**

**WIRE  
ROD**

**TINPLATE†**

**BLACK  
PLATE**

**STEEL  
PRICES**

(Effective  
July 14, 1953)

Hot-rolled 18 ga. & byr.	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terns 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25 -lb. base box	Hollowware Enameling 29 ga.	
4.825 B3	4.775 B3				5.90 B3	7.225 B3			4.525 W6				Bethlehem, Pa.
													Buffalo, N. Y.
													Claymont, Del.
4.325 A2					6.15 A2					† Special coated mfg terns deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct \$2.20 from 1.25-lb coke base box. * COKES: 1.50-lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢.			Coatesville, Pa.
													Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.525 B3				Johntown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
4.025 U1	4.875 U1									\$8.80 U1	\$7.50 U1	6.60 U1	Morrisville, Pa.
3.925 B3	4.775 B3	5.275 B3			5.90 B3	7.225 B3	8.075 B3		4.625 B3	\$8.80 B3	\$7.50 B3		Sparrows Pt., Md.
									4.825 A5				Worcester, Mass.
													Trenton, N. J.
3.925 A7		5.275 A7	5.175 A7										Alton, Ill.
		5.275 R3											Ashland, Ky.
3.925 A1, W8					5.90 U1				4.525 A5, N4				Canton-Massillon, Ohio
									4.625 N4				Chicago, Ill.
3.925 J3, R3	4.775 J3, R3		5.175 R3		5.90 J3	7.225 J3			4.525 A5				Starling, Ill.
4.125 G3	4.975 G3				6.375 G3	7.675 G3							Cleveland, Ohio
													Detroit, Mich.
													Duluth, Minn.
3.925 J3, U1, Y1	4.775 J3, U1, Y1	5.275 U1 5.325 J3	5.175 J3, U1	5.675 U1	5.90 U1, J3 6.40 Y1	7.225 U1 7.725 Y1				\$8.70 J3, U1, Y1	\$7.40 J3, U1	6.10 U1, Y1	Gary, Ind. Harbor, Indiana
		5.475 G2	5.875 G2								\$7.40 G2	6.30 G2	Granite City, Ill.
		5.375 C9											Kokomo, Ind.
	4.775 A7		5.175 A7	5.675 A7									Middletown, Ohio
4.225 S1				5.45 S1	5.90 S1						\$7.40 R3		Niles, Ohio Sharon, Pa.
3.925 J3, U1	4.775 J3, U1	5.275 U1	5.175 U1		5.90 J3, U1	7.225 J3, U1	7.925 U1		4.525 A5	\$8.70 J3, U1	\$7.40 J3, U1	6.10 U1	Pittsburgh, Pa. Midland, Pa.
	5.775 D1							4.725 D1					Portsmouth, Ohio
3.925 W3, W5	4.775 W3, W5	5.275 W3, W5		5.675 W3, W5		7.475 W3				\$8.70 W3, W5	\$7.40 W3, W5	6.55 W5	Weirton, Wheeling, Follansbee, W. Va.
3.925 R3, U1, Y1	4.775 R3, Y1				5.90 U1, R3 6.40 Y1	7.225 R3 7.725 Y1			4.525 Y1	\$8.70 R3			Youngstown, Ohio
4.70 K1	5.875 K1				7.00 K1	8.275 K1			5.325 K1				Fontana, Cal.
4.025 C7													Geneva, Utah
													Kansas City, Mo.
4.625 C7		6.025 C7						5.325 B2					Los Angeles, Torrance, Cal.
													Minneapolis, Colo.
4.625 C7	5.725 C7	6.025 C7							5.175 C7	\$9.45 C7	\$8.15 C7		San Francisco, Niles, Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.925 R3, T2	4.775 T2	5.275 R3, T2			5.90 T2			5.125 T2	4.525 T2	\$8.80 T2	\$7.50 T2		Fairfield, Ala. Alabama City, Ala.
													Houston, Texas

# STEEL PRICES

(Effective July 14, 1953)

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg.'s. Bright
EAST	Bethlehem, Pa.				4.875 B3	6.275 B3	6.225 B3					
	Buffalo, N. Y.	4.15 B3, R3	4.15 B3	5.25 B5	4.875 B3, R3	6.275 B3 6.325 B5	6.225 B3	4.10 B3			6.25 B3	5.525 W6
	Claymont, Del.											
	Coatesville, Pa.							4.35 L4		5.75 L4		
	Conschohocken, Pa.							4.55 A2	5.15 A2		6.50 A2	
	Harriaburg, Pa.											
	Hartford, Conn.			5.85 R3		6.775 R3						
	Johnstown, Pa.	4.15 B3	4.15 B3		4.875 B3		6.225 B3	4.10 B3		5.55 B3	6.25 B3	5.525 B3
	Newark, N. J.			5.70 W10		6.65 W10						
	New Haven, Conn.											
	Camden, N. J.					6.50 P10						
	Putnam, Conn.			5.85 W10								
	Sparrows Pt., Md.		4.15 B3					4.10 B3		5.55 B3	6.25 B3	5.625 B3
	Palmer, Worcester, Mansfield, Mass.			5.85 B5		6.775 B5						5.825 A5, W6
	Trenton, N. J.											
MIDDLE WEST	Alton, Ill.											
	Ashland, Ky.							4.10 A7				
	Canton-Massillon, Ohio	4.15 R3		5.20 R2, R3	4.875 R3	6.325 R2, R3						
	Chicago, Ill.	4.15 R3, U1, W8	4.15 R3 4.90 N4	5.20 A5, W10, W8, L2, B5	4.875 U1, W8, R3	6.325 A5, W8, W10, L2, R3, B5		4.10 U1, W8	5.15 U1	5.55 U1	6.25 U1	5.525 A5, R3, N4 5.625 W7
	Cleveland, Ohio	4.15 R3	4.15 R3	5.20 A5, C13		6.325 A5, C13		4.10 J3, R3	5.15 J3		6.25 J3	5.525 A5, R3, C13
	Detroit, Mich.	4.30 R5 4.50 G3		5.35 R5, P8 5.40 B5 5.45 P3	5.025 R5 5.225 G3	6.475 R5, P8 6.525 B5, P3	6.875 G3	4.65 G3			7.10 G3	
	Duluth, Minn.											5.525 A5
	Gary Ind. Harbor, Crawfordsville, Indiana	4.15 I3, U1, Y1	4.15 I3, U1, Y1	5.20 R3	4.875 I3, U1 Y1	6.325 R3, M5	6.225 U1, I3 6.725 Y1	4.10 I3, U1, Y1	5.15 I3	5.55 U1	6.25 U1, I3 6.75 Y1	5.825 M4
	Granite City, Ill.											
	Kokomo, Ind.											5.625 C9
	Sterling, Ill.	4.75 N4	5.00 N4									5.625 N4
	Niles, Ohio Sharon, Pa.							4.10 S1		5.70 S1	6.25 S1	
	Pittsburgh, Pa. Midland, Pa.	4.15 J3, U1	4.15 J3, U1	5.20 A5, J3, W10, R3	4.875 U1	6.325 A5, W10	6.225 J3, U1	4.10 J3, U1	5.15 U1	5.55 U1	6.25 J3, U1	5.525 A5, J3
	Portsmouth, Ohio											5.725 D1
	Weirton, Wheeling, Follansbee, W. Va.	4.30 W3						4.40 W3				
	Youngstown, Ohio	4.15 R3, U1, Y1	4.15 R3, U1, Y1	5.20 Y1	4.875 U1, Y1		6.225 U1 6.725 Y1	4.10 R3, U1, Y1			6.75 Y1	5.525 Y1
WEST	Fontana, Cal.	4.85 K1	4.85 K1		5.925 K1		7.475 K1	4.75 K1		6.60 K1	6.95 K1	
	Geneva, Utah							4.10 C7			6.25 C7	
	Kansas City, Mo.	4.85 S2	4.85 S2		5.755 S2						5.825 S2	
	Los Angeles, Torrance, Cal.	4.85 B2, C7	4.85 B2, C7	6.65 R3	5.925 B2		6.925 B2					
	Minnequa, Colo.											
	San Francisco, Niles, Pittsburg, Cal.	4.85 C7, P9 4.90 B2	4.85 C7, P9 4.90 B2				6.975 B2					6.475 C7
	Seattle, Wash.	4.90 B2	4.90 B2, S11				6.975 B2	5.00 B2			7.15 B2	
SOUTH	Atlanta, Ga.	4.45 A8	4.45 A8									5.775 A8
	Fairfield, Ala. Alabama City, Ala.	4.15 R3, T2	4.15 R3, T2				6.225 T2	4.10 R3, T2			6.25 T2	5.525 R3, T2
	Houston, Texas Ft. Worth, Texas	4.65 S2	4.65 S2		5.375 S2			4.60 S2				

# Steel Prices

(Effective July 14, 1953)

## Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago  
A2 Alan Wood Steel Co., Conshohocken, Pa.  
A3 Allegheny Ludlum Steel Corp., Pittsburgh  
A4 American Cladmetals Co., Carnegie, Pa.  
A5 American Steel & Wire Div., Cleveland  
A6 Angell Nail & Chaplet Co., Cleveland  
A7 Armco Steel Corp., Middletown, O.  
A8 Atlantic Steel Co., Atlanta, Ga.  
B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.  
B2 Bethlehem Pacific Coast Steel Corp., San Francisco  
B3 Bethlehem Steel Co., Bethlehem, Pa.  
B4 Blair Strip Steel Co., New Castle, Pa.  
B5 Bliss & Laughlin, Inc., Harvey, Ill.  
C1 Calatip Steel Corp., Los Angeles  
C2 Carpenter Steel Co., Reading, Pa.  
C3 Central Iron & Steel Co., Harrisburg, Pa.  
C4 Claymont Products Dept., Claymont, Del.  
C5 Cold Metal Products Co., Youngstown  
C6 Colorado Fuel & Iron Corp., Denver  
C7 Columbia-Geneva Steel Div., San Francisco  
C8 Columbia Steel & Shafting Co., Pittsburgh  
C9 Continental Steel Corp., Kokomo, Ind.  
C10 Copperweld Steel Co., Glassport, Pa.  
C11 Crucible Steel Co. of America, New York  
C12 Cumberland Steel Co., Cumberland, Md.  
C13 Cuyahoga Steel & Wire Co., Cleveland  
D1 Detroit Steel Corp., Detroit  
D2 Detroit Tube & Steel Div., Detroit  
D3 Driver Harris Co., Harrison, N. J.  
D4 Dickson Weatherproof Nail Co., Evanston, Ill.  
E1 Eastern Stainless Steel Corp., Baltimore  
E2 Empire Steel Co., Mansfield, O.  
F1 Firth Sterling, Inc., McKeesport, Pa.  
F2 Fitzsimons Steel Corp., Youngstown  
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.  
G2 Granite City Steel Co., Granite City, Ill.  
G3 Great Lakes Steel Corp., Detroit  
H1 Hanna Furnace Corp., Detroit  
I2 Ingersoll Steel Div., Chicago  
I3 Inland Steel Co., Chicago  
I4 Interlake Iron Corp., Cleveland  
J1 Jackson Iron & Steel Co., Jackson, O.  
J2 Jessop Steel Corp., Washington, Pa.  
J3 Jones & Laughlin Steel Corp., Pittsburgh  
J4 Joslyn Mfg. & Supply Co., Chicago  
K1 Kaiser Steel Corp., Fontana, Cal.  
K2 Keystone Steel & Wire Co., Peoria  
K3 Koppers Co., Granite City, Ill.  
L1 Laclede Steel Co., St. Louis  
L2 La Salle Steel Co., Chicago  
L3 Lone Star Steel Co., Dallas  
L4 Lukens Steel Co., Coatesville, Pa.  
M1 Mahoning Valley Steel Co., Niles, O.  
M2 McLouth Steel Corp., Detroit  
M3 Mercer Tube & Mfg. Co., Sharon, Pa.  
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.  
M5 Monarch Steel Co., Inc., Hammond, Ind.  
M6 Mystic Iron Works, Everett, Mass.  
N1 National Supply Co., Pittsburgh  
N2 National Tube Co., Pittsburgh  
N3 Niles Rolling Mills Co., Niles, O.  
N4 Northwestern Steel & Wire Co., Sterling, Ill.  
N5 Newport Steel Corp., Newport, Ky.  
O1 Oliver Iron & Steel Co., Pittsburgh  
P1 Page Steel & Wire Div., Monessen, Pa.  
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.  
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.  
P4 Pittsburgh Coke & Chemical Co., Pittsburgh  
P5 Pittsburgh Screw & Bolt Co., Pittsburgh  
P6 Pittsburgh Steel Co., Pittsburgh

P7 Portsmouth Div., Detroit Steel Corp., Detroit  
P8 Plymouth Steel Co., Detroit  
P9 Pacific States Steel Co., Niles, Cal.  
P10 Precision Drawn Steel Co., Camden, N. J.  
R1 Reeves Steel & Mfg. Co., Dover, O.  
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.  
R3 Republic Steel Corp., Cleveland  
R4 Roebling Sons Co. (John A.), Trenton, N. J.  
R5 Rotary Electric Steel Co., Detroit  
S1 Sharon Steel Corp., Sharon, Pa.  
S2 Sheffield Steel Corp., Kansas City  
S3 Shenango Furnace Co., Pittsburgh  
S4 Simonds Saw & Steel Co., Fitchburg, Mass.  
S5 Sloss Sheffield Steel & Iron Co., Birmingham  
S6 Standard Forging Corp., Chicago  
S7 Stanley Works, New Britain, Conn.  
S8 Superior Drawn Steel Co., Monaca, Pa.  
S9 Superior Steel Corp., Carnegie, Pa.  
S10 Sweet's Steel Co., Williamsport, Pa.  
S11 Seidellhuber Steel Rolling Mills, Seattle  
T1 Tonawanda Iron Div., N. Tonawanda, N. Y.  
T2 Tennessee Coal & Iron Div., Fairfield  
T3 Tennessee Products & Chem. Corp., Nashville  
T4 Thomas Strip Div., Warren, O.  
T5 Timken Steel & Tube Div., Canton, O.  
T6 Tremont Nail Co., Warcham, Mass.  
T7 Texas Steel Co., Fort Worth  
U1 United States Steel Co., Pittsburgh  
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.  
W1 Wallingford Steel Co., Wallingford, Conn.  
W2 Washington Steel Corp., Washington, Pa.  
W3 Weirton Steel Co., Weirton, W. Va.  
W4 Wheatland Tube Co., Wheatland, Pa.  
W5 Wheeling Steel Corp., Wheeling, W. Va.  
W6 Wickwire Spencer Steel Div., Buffalo  
W7 Wilson Steel & Wire Co., Chicago  
W8 Wisconsin Steel Co., S. Chicago, Ill.  
W9 Woodward Iron Co., Woodward, Ala.  
W10 Wycoff Steel Co., Pittsburgh  
Y1 Youngstown Sheet & Tube Co., Youngstown

## PIPE AND TUBING

Base discounts (per) f.o.b. mills. Base price about \$200 per net on.

	BUTTWELD														SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																						
Sparrows Pt. B3	24.25	8.0	27.25	12.0	32.25	15.5	31.75	16.5	32.75	17.5	33.25	18.0	34.75	18.0								
Youngstown R3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Footana K1	13.25	+2.0	16.25	1.0	18.75	4.5	21.25	5.5	21.75	6.5	22.25	7.0	23.75	7.0								
Pittsburgh J3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Alton, Ill. L1																						
Sharon M3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Pittsburgh N1	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Wheeling W5	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Wheatland W4	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Youngstown Y1	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Indiana Harbor Y1	25.25	9.0	28.25	13.0	30.75	16.5	33.25	17.5	33.75	18.5	34.25	19.0	35.75	19.0								
Lorain N2	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. B3	27.75	13.0	31.75	17.0	33.75	20.5	34.25	19.5	34.75	20.5	35.25	21.0	35.75	20.0								
Youngstown R3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Footana K1	16.75		20.75		22.75		23.25		23.75		24.25		24.75									
Pittsburgh J3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Alton, Ill. L1																						
Sharon M3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Pittsburgh N1	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Wheeling W5	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Wheatland W4	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Youngstown Y1	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Indiana Harbor Y1	28.75	14.0	32.75	18.0	34.75	21.5	35.25	20.5	35.75	21.5	36.25	22.0	36.75	21.0								
Lorain N2	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75

Galvanized discounts based on zinc, at 11¢ per lb. East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 1/2 pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb. use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only butt weld and seamless, 2 1/4 pts. higher discount. Plain ends, butt weld and seamless, 3 in. and under, 4 1/2 pts. higher discount. Butt weld jobbers' discount, 5 pts. East St. Louis zinc price now 11.0¢.



(Effective July 14, 1953)

Add 4.7 pct to base and extras.

	Plate	Sheet
<b>Stainless-iron</b>		
No. 304, 20 pct.		
Coatesville, Pa. <i>L<sup>4</sup></i>	*29.5	
Washington, Pa. <i>J<sup>2</sup></i>	*29.5	
Claymont, Del. <i>C<sup>4</sup></i>	*29.50	
New Castle, Ind. <i>I<sup>2</sup></i>	*29.77	*26.24
<b>Nickel-iron</b>		
10 pct. Coatesville, Pa. <i>L<sup>4</sup></i>	32.5	
<b>Inconel-iron</b>		
10 pct. Coatesville, Pa. <i>L<sup>4</sup></i>	40.5	
<b>Monel-iron</b>		
10 pct. Coatesville, Pa. <i>L<sup>4</sup></i>	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. <i>A<sup>4</sup></i>		77.00
Aluminized steel sheets, hot dip, Butler, Pa. <i>A<sup>7</sup></i>		7.75

<sup>a</sup> Includes annealing and pickling, sandblasting.

22 Ga. H-R cut length F.a.b. Mill Cents Per Lb.	Armature	Elac.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Booth Bottom W/5		8.35	9.60	10.40	10.95	11.50	12.20
Brackridge A/5		8.35	9.60	10.40	10.95		12.20
Granite City G/2							
Ind. Harbor I/5		7.85	8.35	9.60			
Mansfield E/5							
Newport, Ky. N/5		7.85	8.35	9.60	10.40	10.95	
Niles, O. N/5		7.85	8.35				
Vandergrift U/1		7.85	8.35	9.60	10.40	10.95	11.50
Warren, O. R/5		7.85	8.35	9.60			
Zanesville A/7		7.85	8.35	9.60	10.40	10.95	11.50

F.o.b. mill

Add 4.7 pct to base and extras

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.505
18	4	1	—	5	\$2.13
18	4	2	—	—	\$1.67
15	4	1.5	8	—	31.04
6	4	2	6	—	96.54

## Per Net Ton

6 to 24-in., del'd Chicago	\$119.80	to	\$113.80
6 to 24-in., del'd N.Y.	113.50	to	114.50
6 to 24-in. Birmingham.	96.50	to	101.00
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less .....			
	\$128.00	to	\$130.00
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.			

## Base price, f.o.b., dollars per 100 lb

HOUSES			Sheets			Strip		Plates	Shapes	Bars		Alloy Bars				
Cities	City Delivery Charge		Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 3615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 3615 As Rolled	Cold-Drawn A 4140 Annealed	
Baltimore	\$ .20		6.20	7.64	7.81 <sup>3</sup>	7.00			6.85	6.98	6.86	7.92				
Birmingham	.15		6.10	7.00	8.00 <sup>4</sup>	6.30			6.35	6.35	6.15	8.90				
Boston	.20		6.89	7.83	9.23	7.13	9.23-9.35 <sup>2</sup>		7.13	7.06	6.87	8.10	12.40	12.25		14.75
Buffalo	.20		6.18	7.15	9.00	6.65			6.65	6.55	6.35	7.45		12.28		14.78
Chicago	.20		6.18	7.12	8.05	6.42			6.68	6.59	6.65			12.17	14.45	14.55
Cincinnati	.20		6.46	7.14	8.42	6.67			6.33	6.46	6.28	7.30		15.35		14.25
Cleveland	.20		6.18	7.12	7.90	6.58			6.38					11.75		14.25
Cleveland	.20		6.18	7.12	7.90	6.58			6.80	6.88	6.53	7.61		12.12		14.52
Cleveland	.20		6.18	7.12	7.90	6.58			6.50	6.79	6.34	7.40		11.89		14.39
Denver			7.95	8.95	10.10	8.20			7.95	7.95	8.05	9.05				15.25
Detroit	.20		6.35	7.25	8.34	6.30	7.36	6.53	6.93	6.56	7.60	12.27	12.12	14.52		13.44
Detroit			6.45	7.32	7.31	7.31	8.35	6.85	6.85	6.57	7.69					14.62
Houston	.20		7.15	7.85		7.45			7.20	7.35	7.45	9.85		12.95		
Kansas City	.20		6.85	7.79	8.72	7.09			7.05	7.13	6.95	8.08				
Los Angeles	.20		7.25	9.00	9.60	7.55	10.75	7.20	7.35	7.15	9.40	13.40	13.05	15.75		15.85
Los Angeles							11.30			7.25	9.75	13.55				16.05
Memphis	.10		6.79	7.69		6.90			7.01	7.09	6.88	7.89				
Milwaukee	.20		6.35	7.29	8.22	6.59			6.50	6.63	6.45	7.57		11.92		14.42
Milwaukee									6.55			8.57				
New Orleans	.15		6.66	7.56		6.78			6.88	6.96	6.75					
New York	.30		6.78	7.75	9.02	7.16			6.99	6.90	7.06	8.18	12.29	10.39	14.54	12.64
New York													12.14			14.64
Norfolk	.20		6.90			7.20			7.15	7.20	7.20	8.50				
Philadelphia	.25		6.53	7.55	8.35	7.02			6.63	6.67	6.87	7.94	12.04	11.89	14.29	14.39
Pittsburgh	.20		5.95	6.82	8.30	6.20			6.03	6.07	5.98	7.12		11.45		13.75
Pittsburgh			6.18	8.60	8.60	6.55			6.33	6.46	6.28	7.40		11.75		14.25
Portland	.10		7.80	9.05	9.30	7.50			7.05	7.25	7.25	9.40				
Portland			8.55	9.50		7.60										
Salt Lake City	.20		8.80		10.80 <sup>3</sup>	8.45			7.85	8.00	8.40	11.25				
Salt Lake City			8.80		11.30	8.55										
San Francisco	.15		7.35	8.70	9.90	7.60	10.35	7.20	7.25	7.15	9.75	13.55	12.80	15.50		15.55
San Francisco					10.15					9.85			13.05			16.05
Seattle	.20		7.95	8.50	9.90	7.82			7.39	7.30	7.38	9.93		13.30		15.80
St. Louis	.20		6.48	7.42	8.35	6.72			6.73	6.86	6.58	7.70	12.20	12.05	14.45	14.30
St. Paul	.15		6.47	7.48	8.41	6.77			6.69	6.73	6.64	7.78		11.86		14.55
St. Paul			6.62		8.56											

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1) 500 to 1499 lb. (2) 20,000 lb or over. (3) 450 to 1499 lb. (4) 500 to 9999 lb.

F.a.b. Mill	Col	Col	Col	Col	Col	Col	d/b.	d/b.
	Standard & Coated Nails	Woven Wire Fence 9-15½ ga.	17" Fence Posts	Single Loop Bala Ties	Twisted Barbless Wire	Gals. Barbed Wire	March Wire Ann'd	March Wire * Galv.
Alabama City R3	131	140		149		153	6.675	7.07
Albuquerque, Pa. J3								
Atlanta A8								
Bartonsville K2								
Buffalo W6								
Chicago, Ill. N4	131	143		149	156	156	6.675	7.225
Cleveland A6							6.675	
Cleveland A5							6.675	
Crawfordsville M6	133	145		151		135	6.715	7.325
Danvers, Pa. A5	131	140		149		153	6.675	7.075
Duluth A5	131	140	145	149		153	6.675	7.075
Fairfield, Ala. T2	131	140		149		153	6.675	7.075
Houston S2								
Johannstn., Pa. B3	131	143			156	156	6.675	7.225
Joliet, Ill. A5	131	140		149		153	6.675	7.075
Kokomo, Ind. C9	133	142		151		155	6.715	7.175
Los Angeles B2								
Kansas City S2								
Minnequa C6								
Monessen P6								
Moline, Ill. R3			140					
Pittsburg, Cal. C7	150	163		173	173	173	7.625	8.025
Portsmouth P7								
Rankin, Pa. A5	131	140				153	6.675	7.075
So. Chicago R3	131	140	140	149		153	6.675	7.075
S. San Fran. C6								
Sparrows Pt. B3	133			151	158	158	6.775	7.325
Struthers, O. Y1								
Worcester A5	137						6.975	
Wilkinsport, Pa. S10								

Cut Nails, carloads, base \$8.00 per keg (less 20¢ to jobbers), at Conshohocken, Pa., (A2).

\* Alabama City and So. Chicago don't include zinc extra. Galvanized products based on zinc at 11.0¢ per lb.

### CARBON CONTENT

Cents Per Lb. F.o.b. Mill	0.26- 0.40	0.41- 0.60	0.61- 0.80	0.81- 1.05	1.06- 1.25
Bridgport, Conn. <i>S7</i> .....	6.15	8.00	8.60	10.55	12.85
Carmargo, Pa. <i>39</i> .....		8.00	8.60	10.55	12.85
Cleveland <i>45</i> .....	5.45	7.63	8.00	10.55	12.85
Detroit <i>D2</i> .....	6.05	8.25	8.95		
New Castle, Pa. <i>84</i> .....	5.80	8.00	8.60		
New Haven, Conn. <i>D1</i> .....				10.55	12.85
Sharon, Pa. <i>51</i> .....	5.80	8.00	8.60	10.55	12.85
Trenton <i>K4</i> .....		7.95	8.55	10.50	12.80
Wilton, W. Va. <i>H3</i> .....	5.80	8.00	8.60	10.55	12.85
Worcester, Mass. <i>A5</i> .....	5.75	7.95	8.90	10.85	13.15
Yonkers <i>C5</i> .....					

\* Sold on Pittsburgh base.

\$ per 100 ft. carload lots, suit 10 to 24 ft. F.O.B. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox...	2	13	.....	.....	28.51	31.91
	2½	12	.....	.....	35.70	43.07
	3	12	.....	.....	.....	49.77
	3½	11	.....	.....	48.13	58.06
	4	10	.....	.....	63.92	77.10
National Tube .....	2	13	.....	32.98	24.88	.....
	2½	12	36.82	44.41	33.50	.....
	3	12	42.52	51.28	38.00	.....
	3½	11	49.63	59.87	45.16	.....
	4	10	65.91	79.50	59.97	.....
Pittsburgh Steel....	2	13	.....	.....	.....	.....
	2½	12	.....	.....	.....	.....
	3	12	.....	.....	.....	.....
	3½	11	.....	.....	.....	.....
	4	10	.....	.....	.....	.....

# Tempilstiks®

*the amazing  
Crayons  
that tell  
temperatures*

A simple method of  
controlling temper-  
atures in:

- WELDING
- FLAME-CUTTING
- TEMPERING
- FORGING
- CASTING
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- DRAWING
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IN GENERAL

*Also  
available  
in pellet  
and  
liquid  
form*

It's this simple: Select the  
Tempilstik® for the working  
temperature you want. Mark  
your workpiece with it. When  
the Tempilstik® mark melts,  
the specified temperature has  
been reached.

**\$2**  
each

gives up  
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Available in these temperatures (°F)

113	263	400	950	1500
125	275	450	1000	1550
138	288	500	1050	1600
150	300	550	1100	1650
163	313	600	1150	1700
175	325	650	1200	1750
188	338	700	1250	1800
200	350	750	1300	1850
213	363	800	1350	1900
225	375	850	1400	1950
238	388	900	1450	2000

**FREE** —Tempil® "Basic Guide  
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—16 1/2" by 21" plastic-laminated wall  
chart in color. Send for sample pellets,  
stating temperature of interest to you.

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## Miscellaneous Prices

(Effective July 14, 1953)

### RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U1	4.325	5.20	5.275				
Chicago R3				7.05			
Cleveland R3							
Ensley T2	4.325	5.20					
Fairfield T2		5.20				5.125	
Gary U1	4.325	5.20				5.125	
Ind. Harbor T3	4.325	5.275	7.05			5.125	
Johnstown B3		5.20					
Joliet U1		5.20	5.275				
Kansas City S2							
Lackawanna B3	4.325	5.20	5.275			5.125	
Labanon B3				7.05	10.50		11.00
Minnequa C6							
Pittsburgh R3							
Pittsburgh O1							
Pittsburgh P5							
Pittsburgh J3							
Pittg. Cal. C7						5.275	
Seattle B2						5.275	
Steelton B3	4.325		5.275			5.125	
Struthers Y1							
Terrance C7						5.275	
Youngstown R3							

### LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered  
lower Lake ports. Prices effective July  
1, 1953 to end of season.

	Gross Ton
Openhearth lump	\$11.15
Old range, bessemer	10.40
Old range, nonbessemer	10.15
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	

Prices based on upper Lake rail freight  
rates, Lake vessel freight rates, handling  
and unloading charges, and taxes thereon,  
in effect on June 24, 1953. Increases or  
decreases after such date are for buyer's  
account.

### COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa.	\$14.50 to \$15.00
Foundry beehive (f.o.b. oven)	
Connellsville, Pa.	\$16.50 to \$18.00
Foundry, oven coke	
Buffalo, del'd	\$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	23.95
Swedeland, Pa., f.o.b.	23.85
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	28.75
St. Louis, f.o.b.	26.00
Birmingham, del'd	23.21
Lone Star, Tex., f.o.b.	18.50

### ELECTRODES

Cents per lb, f.o.b. plant threaded  
electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
GRAPHITE		
24	84	20.50
18, 20	72	20.00
12, 14	72	20.50
7 to 10	60	21.00
6	60	23.25
4	40	26.00
3	40	27.50
2 1/2	30	28.00
2	24	43.50
CARBON		
40	100, 110	8.95
35	110	8.95
30	110	8.95
24	72 to 84	9.10
20	90	8.95
17	72	9.10
14	72	9.50
10, 12	60	10.30
8	60	10.55



**reducing  
troubles?**

Torrington Swaging Machines offer a  
means of reducing rod, wire and tub-  
ing that improves the quality of the  
material, gives a better surface, with-  
out waste of stock. Hammer blows  
(4000 a minute) speed production,  
and give the metal toughness and  
resiliency that can-  
not be obtained by  
any other method.



Write for your free copy  
of "The Torrington  
Swaging Machine." This  
informative booklet  
gives complete details  
on the art of swaging  
and the extensive line  
of Torrington Swagers.

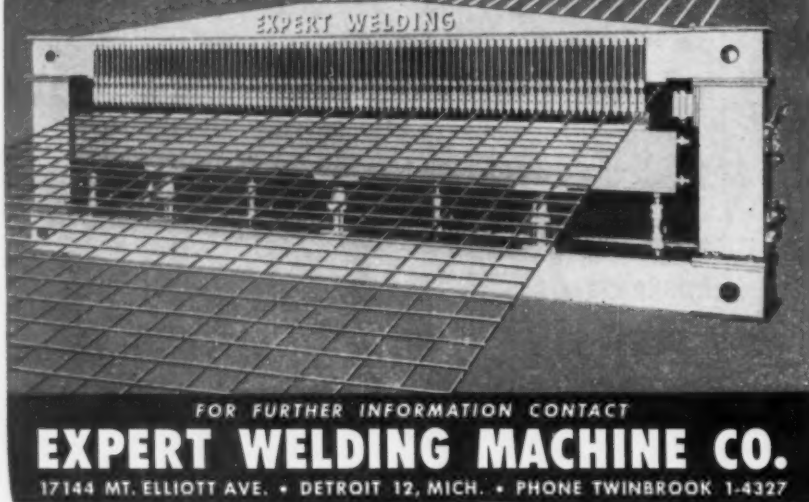
**THE TORRINGTON COMPANY**  
Swager Department

555 Field Street • Torrington, Conn.

Makers of  
**TORRINGTON NEEDLE BEARINGS**

# AUTOMATIC WELDER FOR WIRE MESH

Builders of  
SPECIAL WELDING MACHINES  
for EVERY PURPOSE



The manufacture of multi-product lines has always created problems for metal fabricators. While diverse metal sizes, shapes and perforations enhance product value and customer acceptance — they also add to manufacturing costs. In order to keep customers happy and keep production costs down, put Hendrick's specialized perforated metal facilities to work.

## Your answer to fabricating problems

Hendrick supplies steel sheets tailor-made to your specific job requirements — whether you require perforating, shaping, forming, welding, brazing or riveting, whatever your particular needs be Hendrick has the answer. For more complete information and specifications write Hendrick.



**Hendrick**  
MANUFACTURING COMPANY

37 DUNDAFF ST., CARBONDALE, PA. • Sales Offices in Principal Cities  
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids



### Miscellaneous Prices—

(Effective July 14, 1953)

#### BOLTS, NUTS, RIVETS, SCREWS

##### Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

#### Nuts, Hot Pressed, Cold Punched—Sq.

	Pet Off List		Less	
	Keg	Reg.	Keg	K.
1/2 in. & smaller	+2	15	+2	14
9/16 in. & 5/8 in.	+7	11	+32*	+10*
3/4 in. to 1 1/2 in.				
inclusive	+8	10	+27**	+6**
1 1/2 in. & larger	+9	9	+27	+6
* 9/16 to 3/4 in.				
** 3/4 to 1 1/2 in.				

#### Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	11	26	8	23
9/16 in. & 5/8 in.	2	18	+20	net
3/4 in. to 1 1/2 in.				
inclusive	+6	12	+25	+4
1 1/2 in. & larger	+8	10	+25	+4

#### Nuts, Cold Punched—Hexagon

1/2 in. & smaller	11	26	8	23
9/16 in. & 5/8 in.	9	24	+2	15
3/4 in. to 1 1/2 in.				
inclusive	+1	16	+9	9
1 1/2 in. & larger	+16	3	+20	net

#### Nuts, Semi-Finished—Hexagon

1/2 in. & smaller	23	36	14	28
9/16 in. & 5/8 in.	18	32	4	20
3/4 in. to 1 1/2 in.				
inclusive	8	23	+8	10
1 1/2 in. & larger	+14	5	+20	net

7/16 in. & smaller	33	43		
1/2 in. thru 3/4 in.	26	37		
3/4 in. to 1 1/2 in.				
inclusive	18	30		

#### Stove Bolts

Packaged, steel, plain finished	44 1/2—10
Packaged, plain finish	25 1/2—10
Bulk, plain finish**	59*

\*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

\*\*Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

#### Rivets

1/2 in. & larger	Base per 100 lb \$8.90
7/16 in. and smaller	Pet Off List 30

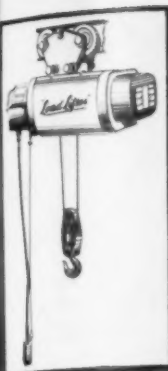
#### Cap and Set Screws

(In bulk)		Pet Off List	
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 3/4 in. x 6 in., SAE 1020, bright			
3/4 in. thru 1 in. up to & including 6 in.		40	
1/2 in. thru 3/4 in. x 6 in. & shorter		24	
high C double heat treat		43	
3/4 in. thru 1 in. up to & including 6 in.		33	
Milled studs		17	
Flat head cap screws, listed sizes		12	
Phillister head cap, listed sizes		7	
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter		37	

#### Machine and Carriage Bolts

	Pet Off List		Less	
	Case	C.	Case	C.
1/2 in. & smaller x 6 in. & shorter		4		20
9/16 in. & 5/8 in. x 6 in. & shorter		5		21
3/4 in. & larger x 6 in. & shorter		3		19
All diam. longer than 6 in.	+4	12		27
Lag, all diam. x 6 in. & shorter		12		27
Lag, all diam. longer than 6 in.		8		23
Plow bolts		30		





## TIRELESS WORKER 'ROUND THE CLOCK

The "Series 700" 'Load Lifter' Electric Hoist is built for heavy-duty service. It never tires—never tires the worker. It enables one man to do heavy lifting jobs faster and better without straining a muscle. At the push of a button, the 'Load Lifter' can lift a one-ton load one foot in two seconds. Production goes up, worker energy stays up, and costs go down.

Man, load and hoist are completely safeguarded because the 'Load Lifter' is tough. It has super-strong heat-treated helical gears, steel suspension, powerful synchronized load and motor brakes, and only 24 volts at the push button. Made with few parts and equipped throughout with ball bearings, the 'Load Lifter' gives long, dependable service. Capacities from 1/2-ton up. Models available with single or two-speed control. For complete information, get in touch with your nearby "Shaw-Box" Distributor or write for Bulletin 399.



**'Load Lifter'**

**ELECTRIC HOISTS**

**MANNING, MAXWELL & MOORE, INC.**  
MUSKEGON, MICHIGAN

Sellers of "Shaw-Box" and 'Load Lifter' hoists, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' Industrial Instruments, and Aircraft Products.

July 16, 1953

## Miscellaneous Prices

(Effective July 14, 1953)

### REFRACTORIES

**Fire Clay Brick** Carloads, per 1000  
First quality, Ill., Ky., Md., Mo., Ohio, Pa.  
(except Salina, Pa., add \$5.25) ...\$99.30  
No. 1 Ohio ...92.40  
Sec. quality, Pa., Md., Ky., Mo., Ill. 92.40  
No. 2 Ohio ...83.15  
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.60) ... 14.40

**Silica Brick**  
Mt. Union, Pa., Ensley, Ala. ...\$99.30  
Childs, Pa. ...103.95  
Hays, Pa. ...105.10  
Chicago District ...122.40  
Western Utah ...116.55  
California ...122.85  
Super Duty, Hays, Pa., Athens, Tex., Chicago ...116.65  
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) ... 17.30  
Silica cement, net ton, bulk, Hays, Pa. ...19.60  
Silica cement, net ton, bulk, Ensley, Ala. ...18.45  
Silica cement, net ton, bulk, Chicago District ...18.45  
Silica cement, net ton, bulk, Utah and Calif. ...25.95

**Chrome Brick** Per net ton  
Standard chemically bonded Balt. Chester ...\$86.00  
Burned, Balt., Chester ...80.00

**Magnesite Brick**  
Standard Baltimore ...\$109.00  
Chemically bonded, Baltimore ...97.50

**Grain Magnesite** St. % -in. grains  
Domestic, f.o.b. Baltimore in bulk fines removed ...\$64.40  
Domestic, f.o.b. Chewalah, Wash., in bulk ...38.00  
in sacks ...43.70

**Dead Burned Dolomite**  
F.o.b. producing points in Pennsylvania, West Virginia and Ohio per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ ...\$13.75

### FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill. Price, net ton; Effective CaF<sub>2</sub> content:  
72 1/2% ...\$44.00  
70% or more ...42.50  
60% or less ...38.00

### METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.  
Swedish sponge iron, c.i.f. New York, ocean bags ... 10.9¢  
Canadian sponge iron, del's. in East ...12.0¢  
Domestic sponge iron, 98+ % Fe, carloads lots ...15.5¢ to 17.0¢  
Electrolytic iron, annealed, 99.5+ % Fe ...44.0¢  
Electrolytic iron, unannealed, minus 325 mesh, 99+ % Fe ...60.0¢  
Hydrogen reduced iron, minus 300 mesh, 98+ % Fe ...53.0¢ to 80.0¢  
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+ % Fe ...83.0¢ to \$1.48  
Aluminum ...31.5¢  
Brass, 10 ton lots ...30.00¢ to 33.25¢  
Copper, electrolytic ...43.50¢  
Copper, reduced ...43.50¢  
Cadmium, 100-199 lb. .95¢ plus metal value  
Chromium, electrolytic, 99% min., and quantity, del'd. ...\$3.50  
Lead ...21.75¢  
Manganese ...57.0¢  
Molybdenum, 99% ...\$2.75  
Nickel, unannealed ...88.0¢  
Nickel, annealed ...95.0¢  
Nickel, spherical, unannealed ...92.0¢  
Silicon ...33.5¢  
Solder powder ...7.0¢ to 9.0¢ plus met. value  
Stainless steel, 302 ...83.9¢  
Stainless steel, 316 ...\$1.10  
Tin ...14.04¢ plus metal value  
Tungsten, 99% (65 mesh) ...\$5.50  
Zinc, 10 ton lots ...23.0¢ to 30.5¢

The  
**CRACK**  
that  
**DIDN'T**  
cause  
catastrophe!



When the massive hook for this huge hoist was made it contained a flaw—an imperfection that *could* have caused disaster if not discovered in time—a tiny crack, too minute for human eyes to see.

Inspection with Magnaflux found it—and the faulty hook was repaired *before* it had a chance to fail.

Magnaflux shows up defects in a wide variety of materials—the modern, scientific way. It *instantly* exposes cracks and defects in metals—even when hidden beneath the surface! Magnaflux is low in cost—non-destructive—and so fast that it detects defects at production line speeds!

What Magnaflux is, and how it saves money and lives, is described in booklet, "Seeing Isn't Always Believing." Write for your free copy.



**MAGNAFLUX**

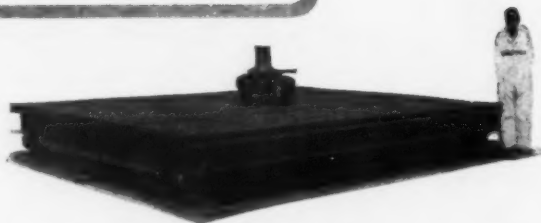


**MAGNAFLUX CORPORATION**

7302 W. Lawrence Avenue, Chicago 31, Illinois  
New York 36 • Pittsburgh 36 • Cleveland 15  
Detroit 11 • Dallas 9 • Los Angeles 58

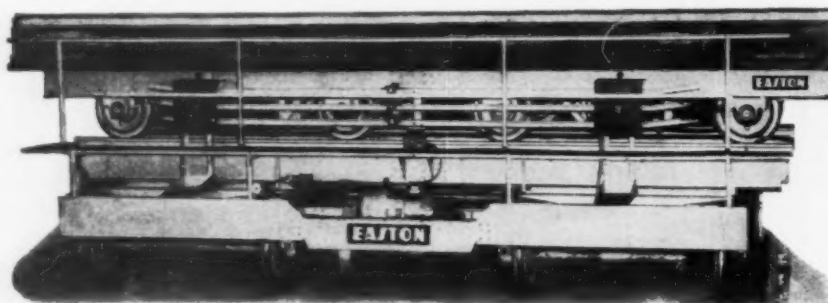
# EASTON

Transfer car with Link-Belt electro fluid drive. Car spotter draws loads on to deck. Capacity 10,000 lbs.



## Motor Driven Cars

EASTON experience covers small and large capacity furnace cars for every requirement, including electric self-propelled cars for automatic continuous heat treating systems.



EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA. • NEW YORK • PHILADELPHIA • PITTSBURGH



want to forget about rust for 20 years?

Pure zinc or aluminum, molten-sprayed on iron or steel surfaces, provides complete, dependable protection against atmospheric corrosion for upwards of 20 years without further maintenance. Such coatings are *mechanically* bonded to the surface—adhesion is *not* dependent on volatile vehicles or binders. Scaling, crazing, blisters, are eliminated. Protection is positive. "Metallize 'em and forget 'em!"

Why not find out more about how you can forget rust for 20 years or more? For descriptive Bulletin 62B—or the name of your nearest Metco Systems contractor—write or wire.

\*Reg. U.S. Pat. Off.

## Metco Systems

### the Metco\* Systems

—a series of 18 basic engineering specifications developed over 19 years of experience with pure zinc and aluminum coatings on many different types of structures and equipment. The Metco Systems provide for standardization of surface preparation, metal coating thicknesses and organic aftercoatings for various service conditions and appearance requirements.

Dept. A, 38-14 30th Street  
Long Island City 1, New York

A-1039

## Ferroalloy Prices

(Effective July 14, 1958)

### Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk in carloads delivered. (65-72% Cr, 2% max. Si.)  
0.06% C ... 34.50 0.20% C ... 33.50  
0.10% C ... 34.00 0.50% C ... 33.25  
0.15% C ... 33.75 1.00% C ... 32.00  
2.00% C ... 32.75  
65-68% Cr, 4-9% C ... 24.75  
62-66% Cr, 4-6% C, 6-9% Si ... 25.60

### S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.  
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.  
Carloads ... 25.85  
Ton lots ... 25.00  
Less ton lots ... 29.50

### High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

### Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.  
0.10% max. C ... 1.18  
0.50% max. C ... 1.14  
9 to 11% C ... 1.11

### Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.)  
Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 25.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.  
Bulk 1-in. x down, 25.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

### Calcium-Silicon

Contract price per lb of alloy, lump delivered.  
30-33% Cr, 60-65% Si, 3.00% max. Fe.  
Carloads ... 22.00  
Ton lots ... 22.10  
Less ton lots ... 23.60

### Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.  
16-20% Ca, 14-18% Mn, 53-59% Si.  
Carloads ... 20.00  
Ton lots ... 22.30  
Less ton lots ... 23.30

### CM52

Contract price, cents per lb of alloy, delivered.  
Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.  
Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-8.00% C.  
Ton lots ... 20.75  
Less ton lots ... 22.00

### SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.  
Ton lots ... 17.50  
Less ton lots ... 19.50

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn.  
Ton lots ... 16.50  
Less ton lots ... 17.75

### Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.  
Carload packed ... 17.50  
Ton lots to carload packed ... 18.50  
Less ton lots ... 20.00

### Ferromanganese

Maximum contract base price, f.o.b., lump size:  
Producing Point Base Mn. Cents Content per lb (Contained Mn)  
Niagara Falls, Alloy, 76-80% 13.15  
Ashtabula ... (Per lb of alloy)  
Etna, Clairton, Pa. ... 74-76% 10.00  
Johnstown, Pa. ... 74-76% 10.00  
Sheridan, Pa. ... 74-76% 10.00  
Add or subtract 0.1¢ for each 1% Mn above or below base content.  
Briquets—delivered, 66 pct. Mn ... 12.50  
Carload, bulk ... 14.05  
Ton lots, packed ... 14.05

## Ferroalloy Prices

(Effective July 14, 1953)

### Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.	
Manganese	3% max. .... \$84.00
16 to 19%	3% max. .... 86.00
19 to 21%	3% max. .... 88.50
21 to 23%	3% max. .... 91.00
23 to 25%	3% max. .... 91.00

### Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.	
96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	36.95
Ton lots	38.45

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.	
Carloads	30.00
Ton lots	32.00
Less ton lots	34.00 to 37.00
Premium for hydrogen-removed metal	1.50

### Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.	
Carloads Ton Less	
0.01% max. C, 0.06% P, 90% Mn	28.45 30.30 31.50
0.07% max. C	27.95 29.80 31.00
0.15% max. C	27.45 29.30 30.50
0.30% max. C	26.95 28.80 30.00
0.50% max. C	26.45 28.30 29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45 25.30 26.50

### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn	21.35c
--	--------

### Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2c.	
Carload bulk	11.40
Ton lots	13.05
Briquet contract basis carlots, bulk delivered, per lb of briquet	12.65
Ton lots, packed	14.25

### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$95.50 gross ton, freight allowed to normal trade area.	
Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.45 for each 0.50% Mn over 1%.	

### Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.	
98% Si, 2% Fe	18.00
97% Si, 1% Fe	18.50

### Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.	
Carloads, bulk	6.95
Ton lots	8.55

### Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.	
27% Si	20.00
75% Si	14.30
80% Si	12.40
85% Si	15.55
89.55%	17.00

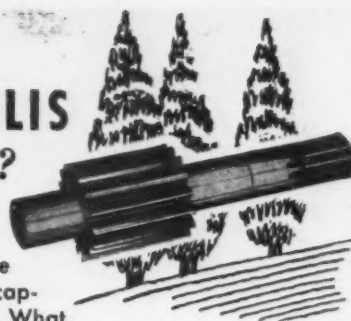
### Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.	
Cast Turnings Distilled	
Ton lots	\$2.05 \$2.95 \$3.75
Less ton lots	2.40 3.30 4.55

### Ferrovandium

45-55% contract basis, delivered, per pound, contained V.	
Openhearth	\$3.00-\$3.10
Crucible	3.10-3.20
High speed steel (Primors)	3.20-3.25

## what does THUJA OCCIDENTALIS have to do with gears?



Thuja occidentalis is a type of cedar tree —of which there are many in the landscaping around our modern, attractive plant. What do they have to do with making gears? Indirectly, a lot; because they contribute a lot to making our plant a desirable and attractive place for our expert craftsmen to work. Pleasant surroundings, we believe, are of major importance in helping our employees produce the highest quality work they are capable of. Thus our Thuja occidentalis is one of the many details we've considered in our efforts to bring you better custom gears. If you're not already a Cincinnati Gear customer, inquire today for full information.

SPUR  
WORM  
INTERNAL  
SPIRAL BEVEL  
HELICAL  
HERRINGBONE  
\*CONIFLEX BEVEL  
SPINE SHAFT

\*Reg. U. S. Pat. Off.



## THE CINCINNATI GEAR COMPANY

"Gears ... Good Gears Only"

Wooster Pike and Mariemont Ave. • Cincinnati 27, Ohio



"Pete can really take it easy now that he's got Columbia E-Z-DIE!"

COLUMBIA TOOL STEEL COMPANY • CHICAGO HEIGHTS, ILL.

Producers of fine tool steels—High Speed Steels  
Die Steels—Hot Work and Shock Resisting Steels  
Carbon Tool Steels.





## QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE  
NATION'S LARGEST  
AND MOST MODERN  
PRODUCTION  
FOUNDRIES

ESTABLISHED 1866  
**THE WHELAND  
COMPANY**  
CHATTANOOGA 2, TENN.

## METAL STAMPING FACILITIES

by *Lansing*  
at your Service for...

**TRANSPORTATION  
EQUIPMENT**

**HOUSEHOLD  
APPLIANCES**

**ELECTRICAL  
EQUIPMENT**

**INDUSTRIAL  
EQUIPMENT**

**FARM  
IMPLEMENTS**

*Lansing Stamping Co.*

LANSING 2

MICHIGAN

## Ferroalloy Prices

(Effective July 14, 1953)

<b>Alsilfer</b> , 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carloads .....	9.90
Ton lots .....	11.30
<b>Calcium molybdate</b> , 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo .....	\$1.15
<b>Ferrocolumbium</b> , 50-60% 2 in. x D contract basis, delivered per pound contained Cb.	
Ton lots .....	\$4.90
Less ton lots .....	4.95
<b>Ferro-Tantalum-Columbium</b> , 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta .....	\$3.75
<b>Ferromolybdenum</b> , 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo .....	\$1.32
<b>Ferrophosphorus</b> , electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton .....	\$65.00
10 tons to less carload .....	\$75.00
<b>Ferrotitanium</b> , 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti .....	\$1.35
<b>Ferrotitanium</b> , 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti .....	\$1.50
Less ton lots .....	1.55
<b>Ferrotitanium</b> , 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton .....	\$177.00
<b>Ferrotungsten</b> , 1/4 x down, packed, per pound contained W, ton lots, f.o.b. ....	\$4.45
<b>Molybde oxide</b> , briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. ....	\$1.14
bags, f.o.b. Washington, Pa. Langeloth, Pa. ....	\$1.12
<b>Simanal</b> , 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk lump .....	14.50c
Ton lots, bulk lump .....	15.75c
Less ton lots, lump .....	16.25c
<b>Vanadium Pentoxide</b> , 86-89% V <sub>2</sub> O <sub>5</sub> contract basis, per pound contained V <sub>2</sub> O <sub>5</sub> .....	\$1.28
<b>Zirconium</b> , 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots .....	21.00c
<b>Zirconium</b> , 12-15%, contract basis, lump, delivered, per lb of alloy.	
Carload, bulk .....	7.00c
<b>Boron Agents</b>	
<b>Borasil</b> , contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4% Si, 40-45%, per lb contained B. ....	\$5.25
<b>Bortam</b> , f.o.b. Niagara Falls	
Ton lots, per pound .....	45c
Less ton lots, per pound .....	50c
<b>Corbortam</b> , Ti 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.	
Ton lots, per pound .....	10.00c
<b>Ferroboron</b> , 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots. ....	\$1.20
F.o.b. Wash., Pa.; 100 lb up	
10 to 14% B. ....	.85
14 to 10% B. ....	1.20
19% min. B. ....	1.50
<b>Grainal</b> , f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1 .....	\$1.00
No. 6 .....	68c
No. 79 .....	50c
<b>Manganese - Boron</b> , 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd	
Ton lots .....	\$1.46
Less ton lots .....	1.57
<b>Nickel - Boron</b> , 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered	
Less ton lots .....	\$1.30
<b>Silcaz</b> , contract basis, delivered.	
Ton lots .....	45.00c

## M-S-A EAR DEFENDERS



If your workers "can't hear themselves think," chances are you'll hear about it in lowered production and damaged hearing. Loud industrial noises sap energy, interfere with job concentration, and sometimes result in serious hearing loss. M.S.A. Ear Defenders block out these costly noises, yet allow wearer to hear warning signals, speech, and telephone conversation.

M.S.A. Ear Defender design insures comfortable fit; complete closure of ear canal; easy to insert, remove. Ear Defenders are easily cleaned with soap and water. Convenient carrying case keeps them clean in pocket. Write for details.



Mine Safety Appliances Co.  
Brad dock, Thomas & Meade Sts.  
Pittsburgh 8, Pa.

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automatic, high-speed  
heavy-duty  
**WIRE STRAIGHTENING  
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CUTTING MACHINES**

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MULTIPLE SPINDLE

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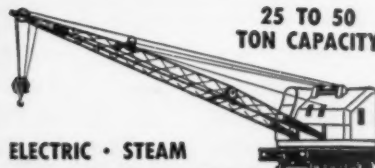
**THE ESPEN-LUCAS MACHINE WORKS**

FRONT AND GIRARD AVE., PHILADELPHIA, PENNA.

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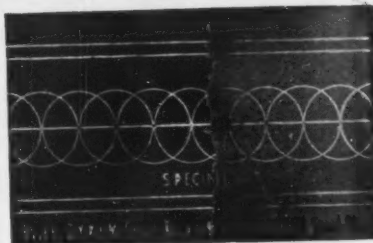
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Simply brush on right at the bench; ready for the layout in a few minutes. The dark blue background makes the scribed layout lines show up in sharp relief, and at the same time prevents metal glare. Increases efficiency and accuracy.

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DYKEM HI-SPOT BLUE No. 107 is used to locate high spots when scraping bearing surfaces. As it does not dry, it remains in condition on work indefinitely, saving scraper's time. Intensely blue, smooth paste spreads thin, transfers clearly. No grit; noninjurious to metal. Uniform. Available in collapsible tubes of three sizes. Order from your supplier. Write for free sample tube on company letterhead.

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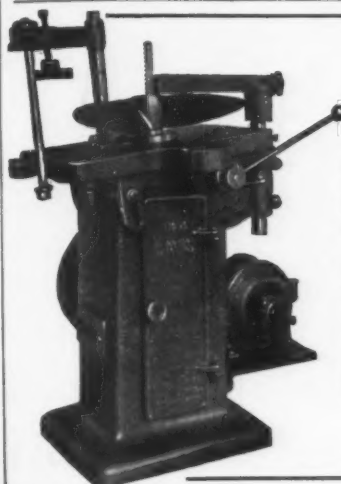


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LITITZ & KELLER AVE

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any size or shape product, any size order from the smallest to the largest

Excellent facilities for export shipment

## ENTERPRISE

GALVANIZING COMPANY

2525 E. Cumberland St. Philadelphia 25, Pa.

# RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT

D. C. MOTORS					
Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCP	600	400/500
1	2000	Whse.	Mill	600	220/460
1	940	Whse.	QM	250	140/170
1	900	Whse.		250	450/550
1	600	Al. Ch.		250	400/800
1	500	Whse.	CC-216	600	300/900
2	450	Whse.		550	415
1	400	G.E.	MCP	550	300/1050
2	300	Whse.	CB-5094	230	575/1150
1	200/300	G.E.	MPC	230	360/920
1	200	Rel.	1979T	230	720
1	200	Whse.	CB-5113	230	400/800
1	150	Whse.	CB-2073	230	575/1150
1	150	G.E.		600	250/750
1	150	Cr. Wh.	65H	230	1150
8	150	Cr. Wh.	SSH-TEFC	230	960
1	150	Whse.	SK-151R	230	900/1800
1	150	Whse.	SK-201	230	360/950
1	50/120	G.E.	SCM-AH	230	250/1000
2	100	Whse.	SK-181	230	450/1000
1	100	G.E.	CDP-115	230	1750

## MILL & CRANE

1	50	G.E.	CO-1810	230	725
1	30	Whse.	K-5	230	975
1	15	Whse.	K-5	230	630
1	15	C.W.	SCM-AH	230	1150
1	15	G.E.	MD-104	230	400/800
3	6.25	Whse.	K-3	230	680
4	8	C.W.	SCM-FF	230	1750
3	3	Whse.	HK-2	230	835

## A.C. MOTORS

3 phase—60 cycle

SLIP RING					
Qu.	H.P.	Make	Type	Volts	Speed
1	1800	G.E.	MT-498	2300	360
1	1500	ABB		2300	720
1	1200	G.E.	MP-26	2300	375
2	1000	A.C.	Mill	2300	240
1	500	Whse.	CW	550	850
1	500	G.E.	IM	440	900
1	500	G.E.	M-574-Y	6000	900
1	400	Whse.	CW	440	514
1	400	Whse.	CW-1218	2200	435
1	350	G.E.	MT-442Y	2200/4000	253
2	300	G.E.	MT-565Y	2300	900
1	300	A.C.	3-Brg	440	505
1	250	G.E.	MT-424-Y	4000	257
1	250	G.E.	MT-5598	2200	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	26QB	410	595
1	200	G.E.	IM-17	440	600
1	200	G.E.	IM	440	435
1	200	G.E.	MTT	440	1170
1	150 (unused)	Whse.	CW	2300	435
1	150	G.E.	IM-16	440	600
2	125	A.O.		440	885
1	125	Al. Ch.		440	720
4	125	G.E.	MT-566Y	440/2200	435
1	100	G.E.	IM	440	600
5	100	A.C.	ANY	440	695
1	100	G.E.	IM-16	2200	435
1	100	Whse.	CW-808A	440	700

## SQUIRREL CAGE

2	850	G.E.	FT-559HY	440	3570
2	450	Whse.	CH-1420	2300/4150	354
1	250	G.E.	IK-17	440	580
1	250	G.E.	IK	440	585
8	200	G.E.	KT-557	440	1800
1	150	Whse.	CS-8568	440	880
1	150	Whse.	CS	440	580
1	150/75	G.E.	IK	440 900/450	
2	125	Al. Ch.	ARW	2200	1750
1	125	G.E.	RF-6328-Z	440/2200	3585
1	125	Whse.	MS	440	485

## SYNCHRONOUS

2	8500	G.E.	TS	2300	257
2	3100	G.E.	ATI	2300	360
3	1750	G.E.	ATI	2300	8600
2	2000	Whse.		2300	120
3	735	G.E.	ATI	2200/12000	600
1	450	Whse.		2200	450
2	350	G.E.	TS	2200	156

## M-G Sets—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
1	2000	G.E.	500	680	11000
1	2000	G.E.	514	600	6600/13200
3	1500	G.E.	514	250	6600/13200
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	360	275	4400
1	1500	G.E.	600	600	4160
1	1500	C.W.	514	115	4000/13000
2	1000	Whse.	900	600	4160
1	1000	G.E.	900	250	2200
1	750	Whse.	900	275	4160
1	750	C.W.	514	115	2300
1	600	G.E.	720	250	440/2300
1	500	G.E.	720	125	2300
1	500	Whse.	900	125/250	440
1	500	Whse.	900	250	6600/13200
1	500	Whse.	1200	125/250	2300
1	400	Whse.	1200	250	2300
1	400 (3U)	Cr. Wh.	1200	125/250	2300
1	150	Whse.	1200	275	2300
1	140 (3U)	Cr. Wh.	600	125/250	440/2300
1	100	Delco	1200	125/250	2300
1	100	G.E.	1170	125	220/440

## FREQUENCY CHANGER SETS

Qu.	KW	Make	Freq.	Volts
1	3000	G.E.	25/60	2300/2300/4000
2	2500	G.E.	25/62.5	2300/2500
1	1000	G.E.	25/58.3	4400/2300
1	500	Al. Ch.	2560	11000/2300

**BELYEA COMPANY, INC.**  
47 Howell Street, Jersey City 6, N. J.

# The Clearing House

NEWS OF USED AND REBUILT MACHINERY

**Make Imports Pay . . .** Many West Coast used machinery firms still find they can do a profitable business handling European machine tools. Lower price of foreign equipment is the main selling point, but if a dealer is able to carry imported machinery in stock, promises of immediate delivery frequently change inquiries into firm orders.

Given Machinery Co., San Francisco and Los Angeles, one of the firms that has been highly successful in selling European tools, told THE IRON AGE about a recent sale which is typical of its operations.

About 6 months ago Ampex Electric Co., Redwood City, Calif., a manufacturer of tape recorders and electronics equipment, needed a universal milling machine in a hurry. At the time, the delay on deliveries of machine tools of this type ran 6 to 8 months. Price was around \$10,000.

**Offered on Approval . . .** Given Machinery offered Ampex a French-made Dufor No. 2 universal milling machine on approval. Delivery was from stock, and the machine sold for \$7,300, tax included.

Ampex tried the milling machine on tool and die work, jig boring and general production, liked the results, and 4 months later bought another Dufor. Last month the company ordered a third milling machine in addition to an English lathe.

**Performance Is Proof . . .** The Given Co., which currently has one of the largest stocks of used and imported machinery on the Coast (valued between \$250,000 and \$300,000), had a similar experience with another Redwood City electronics firm.

After finding that foreign machine tools were able to do the job required, the electronics manufacturer, Hewlett-Packard Co.,

ordered two French milling machines and a German turret lathe.

**Must Be in Stock . . .** Most of the dealers who have had success with imported tools have found it necessary to keep machinery and replacement parts in stock. This requires a sizable financial investment, but firms that have been doing it say it pays.

They claim that being able to promise quick delivery gives them an advantage over Western sales agents of machine tool manufacturers who do not carry equipment in stock at their West Coast offices.

**Who's Buying? . . .** Current major markets for used machinery in the West are divided into three categories: (1) Large firms operating on definite budgets who set their own top price for equipment they want, regardless of what current market conditions may be; (2) small operators shopping for bargains; (3) new shops starting in business with limited capital.

The first group is the fastest growing category, developing as a result of defense stretchouts and government economy moves which have forced these firms to watch their dollars more closely.

**Plan for Next Year . . .** Philadelphia Chapter of the Machinery Dealers National Assn., selected as host for the association's next annual convention to be held at Warwick Hotel, May 12-15, is already doing spadework on plans for the next meeting.

Frank J. Lunney, Eastern Div., Interstate Machinery Co., chosen as chairman of the 1954 convention, this week invited around 50 members and wives to a buffet supper at his home. The informal meeting was highlighted by enthusiastic discussions of the program and other aspects of the coming convention.